UNITED STATES
ATOMIC ENERGY COMMISSION

IN REPLY REFER TO:
AF:CLR

Piketon, Ohio 45661
March 25, 1966

Goodyear Atomic Corporation
Piketon, Ohio 45661

Attention: Mr. G. H. Reynolds, General Manager

Subject: HEALTH PROTECTION COSTS

Gentlemen:

This letter confirms the verbal request of Walter Koester and Clyde Rice to Dr. C. R. Milone that GAT provide the Area Office with an estimate of the annual cost of "Health Protection" services, which can be transmitted to Oak Ridge for use in replying to a Headquarters inquiry. These costs may be estimated where necessary, and should be supported by the following detailed information:

I. The total direct cost for each of the organizational units that comprise the three aspects of "Health Protection".

   A. Total Medical Costs

   B. Total Industrial Hygiene Costs

   C. Total Health Physics Costs

   Please report the number of persons included in the cost estimates for each unit.

II. Approximate indirect cost for each of the above three organizational units. These costs are to include G&A that had not been allocated, but is related to the unit. (This G&A rate should be less than the plant rate because there will be many G&A persons who do not serve these three units).

   A. If possible, show the number of persons included in the indirect cost estimates for each unit.

3/28/66

March 25, 1966

III. Identify the portion of the above direct costs applicable to the maintenance and creation of Health Protection records.

A. Indicate the methods used in maintaining records, i.e., electronic accounting machines (EAM), computers, manual, etc.

B. Show the records maintained by each method.

C. Computer service costs are to be included in the direct cost estimates mentioned above.

We appreciate your efforts in compiling this information on such short notice. This will enable us to meet the Oak Ridge due date of March 25 for replying to the Headquarters request.

Very truly yours,

R. V. Anderson

R. V. Anderson
Manager, Portsmouth Area

bcc: R. J. Reed
D. W. Doner
C. R. Milone
Dr. Lehman

GOODYEAR
Goodyear Atomic Corporation
P.O. Box 628
Piketon, Ohio 45661
A SUBSIDIARY OF THE GOODYEAR TIRE & RUBBER COMPANY
ACTING UNDER U. S. ATOMIC ENERGY COMMISSION CONTRACT AT-(33-2)-1
TELEPHONE: PIKETON, OHIO AREA CODE 614-289-5511 TWX: 614-340-0800 TELEGRAMS: WUX-PIKETON, OHIO

MAR 25 1966

U. S. Atomic Energy Commission
Piketon, Ohio

Attention: Mr. R. V. Anderson
Manager, Portsmouth Area

Subject: HEALTH PROTECTION COSTS

Gentlemen:

Set forth below is the cost information requested by Messrs. Koester and Rice on March 22, 1966. Since it was impossible, under our accounting system, to relate the number of people included in the indirect cost estimates this has been omitted.

Health Protection Costs

	Direct Costs	Units of Personnel	Indirect Costs	Total Costs
Medical	$ 68,000	7	$ 43,000	$111,000
Records Cost *	12,000			
Industrial Hygiene	25,000	3	14,000	39,000
Records Cost *	3,000			
Health Physics	86,000	11	79,000	165,000
Records Cost *	19,000			
Total	$179,000	21	$136,000	$315,000

*Direct costs related to maintenance and creation of records. $ 34,000

MAR 25 1966

Health Protection Records

		IBM	Manual
Medical:	Personal Medical Records		100%
	Departmental Records		100%
Industrial Hygiene:	Hearing Program Records		100%
	Inspection and Survey Results		100%
	Urinary Results (Toxic Chemicals)	100%	
Health Physics:	Urinary Program and Results (Scheduling, etc.)	100%	
	Film Badge Program and Results	90%	10%
	Airborne Activity Results	85%	15%
	Background Environment Results		100%
	Routine Area Survey Results		100%
	In Vivo Program and Results		100%
	Special Survey and Sample Results		100%
	PG Release Results		100%
	Weather Records		100%
	Miscellaneous		100%

If you have any questions concerning the above information please contact R. B. Boeye of my staff.

Very truly yours,

GOODYEAR ATOMIC CORPORATION

ORIGINAL SIGNED BY
G. H. REYNOLDS

G. H. Reynolds
General Manager

RBB:rgh

GOODYEAR

Goodyear Atomic Corporation

P.O. Box 628

Pikelon, Ohio 45661

A SUBSIDIARY OF THE GOODYEAR TIRE & RUBBER COMPANY
ACTING UNDER U. S. ATOMIC ENERGY COMMISSION CONTRACT AT-(33-2)-1

TELEPHONE: PIKETON, OHIO AREA CODE 614-289-5511 TWX: 614-340-0800 TELEGRAMS: WUX-PIKETON, OHIO

JAN 25 1966

Refer: O:WK

U. S. Atomic Energy Commission
Piketon, Ohio 45661

Attention: Mr. R. V. Anderson
Manager, Portsmouth Area

Subject: ORO 1966 HEALTH PROTECTION APPRAISAL

Gentlemen:

Per your request of January 4, enclosed is a completed data sheet "Man-year effort and cost of applied health protection" for use by ORO personnel in preparing for the Annual Health Protection Appraisal and Review.

Sincerely yours,

ORIGINAL SIGNED BY
G. H. REYNOLDS

G. H. Reynolds
General Manager

DWD:clw

Enc.

cc: G. H. Reynolds
C. R. Milone
H. B. Lehman, M.D.
D. W. Doner

Man-Year Effort and Cost of Applied Health Protection

I. Facility Information

1. Facility Name: Goodyear Atomic Corporation.

2. Total Plant Population: 1170 (1/23/66).

3. Average per Shift Population 95. Number of shifts 4*.
*Designated as A,B,C,D

II. Medical Program

1. Annual Medical Budget: $71,870.

2. Number of M.D.'s: 2

3. Number of Nurses (a) total 3 R.N., one serves as Laboratory and X-ray Technician. (b) shift none.

4. Number of Medical Technicians (a) total ¼ man-year /Optician/ (b) shift none.

5. Cost of non-staff sample analysis $200.

III. Industrial Hygiene Program

1. Annual Industrial Hygiene Budget: $27,250.

2. Number of I.H. (a) total 2 (b) shift none

3. Number of I.H. Technicians (a) total none (b) shift none

4. Cost of non-staff sample analysis $8,600/year.

IV. Health Physics Program

1. Annual Health Physics Budget: $45,100.

2. Number of H.P. (a) total 1 (b) shift none.

3. Number of H.P. Technicians (a) total 4 (b) shift 3*
*1 each X,Y,Z Shift

4. Number of H.P. and Technicians involved in:
On-site monitoring (including shift) 1.

Personnel monitoring 2½.

Environmental monitoring (including stack and waste monitoring ½.

IV. Health Physics Program (contd)

5. Cost of non-staff sample analysis $25,000.

V. Criticality Safety Program

1. Annual Criticality Safety Budget: $23,000.

2. Criticality Safety Specialists (a) total 2½
(b) shift all shifts on call.

VI. Protective Clothing and Equipment Costs

1. Annual cost of providing protective or contamination equipment or clothing such as smocks, coveralls, shoes, masks, shoecovers, etc., basically intended for health physics or industrial hygiene purposes, including costs of laundering and replacement: $120,704.

2. Number of employees whose work requires protective clothing: 400.

VII. Indication of degree of participation of applied health protection staff in matters normally considered operations or process control monitoring.

Indicate estimate of man-years for:

1. Process control effluent monitoring 1 man-year.

2. Operation of facilities, such as laundry, etc. ½ man-year.

UNITED STATES
ATOMIC ENERGY COMMISSION

IN REPLY REFER TO:
O:WK

Portsmouth, Ohio

JUN 1 1961

Goodyear Atomic Corporation
Portsmouth, Ohio

Attention: Mr. G. H. Reynolds, General Manager

Subject: GAT HEALTH PROTECTION PROGRAM REVIEW - MAY 1961

Gentlemen:

We are forwarding a copy of a memorandum from S. R. Sapirie dated June 6, 1961, subject as above, together with five copies of the report prepared by the 1961 health protection reviewers.

Although the reviewers offer comments on several areas of health protection in which they feel improvements are possible, it is our impression that the reviewers considered GAT's health protection standards to be very satisfactory in most areas.

Any comments you care to offer concerning the reviewers' recommendations will be most welcome. It is requested that we be advised of any action taken by Goodyear as a result of these recommendations.

Very truly yours,

for Robert H. Thalgott
Manager, Portsmouth Area

Enclosure:
Cy SRS memo dtd 6/6/61
w/attach.

6/14/61

GOODYEAR
Goodyear Atomic Corporation
P.O. Box 628
Portsmouth, Ohio
A SUBSIDIARY OF THE GOODYEAR TIRE & RUBBER COMPANY
ACTING UNDER U. S. ATOMIC ENERGY COMMISSION CONTRACT AT-(33-2)-1

PLANT SITE:
PIKE COUNTY, OHIO

TELEPHONE:
WAVERLY, OHIO

TELEGRAMS:
WUX-PORTSMOUTH, OHIO

JUL 1 1961

U. S. Atomic Energy Commission
Portsmouth, Ohio

Attention: Mr. R. H. Thalgott
Manager, Portsmouth Area

Subject: GAT HEALTH PROTECTION PROGRAM REVIEW - MAY 1961

Gentlemen:

The report of the review which was attached to the letter we received on June 14, contained four specific recommendations on which we would like to comment:

a. It is recommended that GAT re-evaluate criterion for assignment of employees to periodic physicals.

The report indicated that "The same criterion for assigning employees to the bioassay program was the same as they used for determination of which employees shall be given special physical examinations."

This is only partially true. The bioassay program is used primarily for environmental monitoring purposes. The special physical examination program, which is given to a portion of those who are on the bioassay program, is based upon the degree of potential exposure to hazardous (radiological and chemical) material with the degree of potential exposure established by supervision in collaboration with the Medical Department. Those of the group on the bioassay program who do not receive physical examinations are considered to have radiological exposures of such a limited nature that the medical value of physical examinations would not justify the expense involved. We have never usedspecial physical examinations among hourly employees for the basic purpose of determining fitness for duty. We realize that such examinations might be of potential value but, in our opinion, if we were to institute such a program it should be equally as important to apply it to all employees and we do not feel that this policy would justify the expense associated therewith.

b. It is recommended that some additional effort be made to control dusting during operations in the Feed Plant.

Immediately following the program review, the Health Physics Department recommended certain controls for application in the Feed Plant and these controls have been put into effect.

c. It is recommended that operating procedures be reviewed more frequently in order to be sure that they are current.

We are now in the process of reviewing such procedures.

d. It is recommended that procedures be reviewed for control of unsafe containers in the decontamination building.

We are now in the process of reviewing such procedures.

Sincerely yours,

GOODYEAR ATOMIC CORPORATION

ORIGINAL SIGNED BY
G. H. REYNOLDS

G. H. Reynolds
General Manager

GHR:clw 7/21/61

cc: G. H. Reynolds ✓
D. W. Doner
C. L. French

Health Protection Program Review of Goodyear Atomic Corporation. Portsmouth, Ohio, May 1961

I. Introduction

J. A. Lenhard and H. V. Heacker of ORO Research and Development Division visited the Portsmouth Gaseous Diffusion Plant operated by Goodyear Atomic Corporation, during May 10 through May 12, 1961, to conduct the first formal ORO0 review of the GAT Health Protection Program in accordance with the requirements of Manual Chapter AEC 0504. The health protection program of this facility was previously reviewed during 1957 by an ORO appointed committee.

This current review was intended to cover in a general manner, all phases of the health protection program, including medical, industrial hygiene, health physics, waste disposal, and criticality control programs.

The reviewers spent about two days discussing the various programs with appropriate GAT personnel and one-half day touring selected facilities. A critique was held at the end of the review to discuss the results with GAT and Area Office Management personnel.

II. Description of Hazards

In-Plant. The major in-plant health hazards are those associated with the internal deposition of normal and enriched uranium compounds, fluorine compounds, and various solvents. A continuing and important problem is the control of enriched uranium during processing and handling in order to avoid accidental criticality. Problems of a secondary nature are (a) external exposure to beta and gamma radiation in certain facilities and from sealed sources and X-ray units in use at the plant. (b) Mercury, Cadmium and other industrial toxicant control. (c) Heat and noise control.

Off-site. The major off-site hazards from the GAT operation are from the gaseous release of fluorine and uranium compounds, and the release to surface streams of chromates, fluorides, and uranium. Control of pH of water discharges to surface streams is a continuing problem of a secondary nature.

III. Description of Health Protection Program

A. Responsibilities, Procedures, and Training.

The primary responsibility for operational health protection at GAT rests with line supervision. Supervision is directed to provide each employee with the knowledge, equipment and operational procedures necessary to afford himself adequate protection against the hazards associated with his work.

The health protection and criticality control groups in the GAT organization provide training, advice, and consultation as requested by supervision

and also conduct periodic audits and surveys of operations in order to evaluate the adequacy of current practices and procedures. The results of the periodic audits of operations are made available to responsible supervision for corrective action and to management if action is not taken in a reasonable amount of time.

The basic criteria for safe operations are developed and proposed by the health protection and criticality control groups and are approved by management. These criteria are based upon currently accepted standards and the AEC Manual. Operational procedures are developed by operating supervision and reviewed by safety groups when requested.

A training program is carried out for all new employees. This program covers health protection in addition to other topics. The primary mode of continued training for supervision and other employees is through periodic departmental safety meetings. These meetings are held monthly and cover topics of current interest. Members of the health protection groups are occasionally requested to provide specific programs for these meetings. In addition, a periodic supervisory safety news letter provides information of a detailed nature regarding in-plant hazards.

B. Area and Personnel Monitoring

The Health Physics - Industrial Hygiene department provides special surveys of areas and operations as requested by supervision. In addition, operating areas in which hazards may develop are surveyed by the health protection department on a monthly or quarterly schedule depending upon the potential for exposure. These surveys usually include spot air samples, smear samples, clothing checks, and urinary samples in addition to a general inspection of areas and procedures. As required these surveys also include vehicle inspection, noise and heat surveys, and field audio checks.

All GAT employees and visitors to the plant (except AEC employees) are provided with film monitoring for beta and gamma radiation. About two-thirds of the plant population are assigned quarterly badges and the remaining employees, who have a somewhat higher potential for exposure, are assigned a monthly badge. About one-half of the plant population submits urine samples on a periodic basis. The sampling frequencies vary from one to six months depending upon potential for exposure. All personnel monitoring data is recorded and summarized on IBM machines.

C. Waste Disposal and Off-site Monitoring

The primary sources of gaseous waste are two stacks which serve the feed plant and the top purge unit. Both of these stacks release uranium and fluorine compounds and the feed plant stack also releases elemental fluorine.

The primary sources of surface water contamination are as follows:

1. A 300,000 gallon holding pond which serves the Cleaning and the Decontamination building discharges chromates and fluorides and small amounts of uranium to the Little Beaver, thence to the Big Beaver and Scioto River.

2. Some chromates are discharged directly into the Scioto from the Water Treatment Plant.

3. The feed plant discharges liquid waste to a neutralization basin which discharges to the Little Beaver. Fluorides represent the primary contaminant in this discharge.

4. Drainage from the coal piles spills into a creek south of the plant. Acidity control is the primary problem with this waste.

GAT maintains a comprehensive off-site monitoring program obtaining air, water, mud, and vegetation samples from stations on radii ranging from one to five miles from the plant site. Pages 54-63 of GAT-R-241 contain an elaborate discussion of this environmental sampling program and sampling results for 1960.

D. Medical Program

The activities of the Medical Service Group are described in detail on pages 33 through 40 of GAT-R-241. Pre-employment and termination physicals are employed by GAT. In addition, salaried employees and certain hourly employees exposed to hazards are provided with periodic physicals. Employees are assigned to "special" physicals based upon degree of potential for exposure to hazardous materials.

E. Criticality Control

The Operations Analysis Department of the Technical Division of GAT provides advice and consultation with regard to criticality control to responsible supervisory groups. This department also conducts bi-weekly audits of areas where a criticality potential exists and makes written reports of these audits available to area supervisors for information and any necessary corrective action. All process changes and the more significant procedure changes are reviewed by this department.

The Criticality Hazards Committee which is appointed by the Plant Manager meets as required to resolve specific problems.

An outside consultant group meets periodically at GAT to evaluate the overall criticality control program. This group last met on April 21, 1961.

IV. Observations of Reviewers.

The health protection and criticality control programs of GAT are in general well organized, well carried out, and are consistent with the potential hazards existing at the facility. The personnel of the health protection and criticality

control groups were exceptionally familiar with the workings of their programs and were able to provide all information requested. The recommendations of the Health Protection Study Committee which met at GAT during April 1957, have been satisfactorily implemented. The following items were noted in particular during the review:

A. Staffing.

The general reduction in force at GAT has resulted in the reduction of health protection staff by two man-years. Since manpower has been effectively used in the past, some audit functions will probably have to be deleted. However, it is the opinion of the reviewers that the proposed staff can provide reduced, yet adequate health protection services provided that the operating groups cooperate fully and dependably.

B. Criteria for Special Physicals.

The criterion for determination of which employees shall be given a "special" physical is potential for exposure to hazardous materials. This is also the criterion for assigning employees to the bio-assay program. However, there are employees on the bio-assay program who are not given physicals. There is no clear difference between those two criteria. Also, the plant guards are not given physicals to determine fitness for duty.

C. Feed Plant.

During the field trip to the feed plant, accumulations of green salt were observed which might have been better controlled. Also, operations observed in the feed plant were dusting noticeably but operators were not masked nor in possession of masks. The supervisor indicated operators did not normally mask in the area. A check of operating procedures indicated that anyone present in the area should have been masked.

D. Decontamination Facility.

The decontamination facility was very clean and free of noticeable contamination. During the tour, the reviewers found a five gallon bucket hanging on a valve beneath a filled "always-safe" column. The arrangement was such that a leaking valve would have filled the bucket. Numerous other unsafe containers were noted in the area.

V. Recommendations.

A. It is recommended that GAT re-evaluate criterion for assignment of employees to periodic physicals.

B. It is recommended that some additional effort be made to control dusting during operations in the feed plant.

C. It is recommended that operating procedures be reviewed more frequently in order to insure that they are current.

D. It is recommended that procedures be reviewed for the control of unsafe containers, in the decontamination building.

E. The recommendations of the criticality consultants contained in their letter of April 21 to the GAT General Manager are endorsed.

HEALTH PROTECTION REVIEW OF GOODYEAR GASEOUS DIFFUSION PLANT, MARCH 1962

I. Introduction and Summary

The second health protection program review of the GAT Portsmouth Gaseous Diffusion Plant was made March 6-8, 1962, by R. L. Hervin and W. A. Johnson of the OROO Research and Development Division. This review covered the basic changes in the GAT health protection program since the 1961 review and included a more detailed analysis of the following categories: Off-site Monitoring, Waste Disposal, Emergency Planning, Operating Procedures, and action taken on previous recommendations. The review included scheduled discussions with appropriate staff and supervisory personnel, and visits to appropriate facilities.

The GAT Health Protection Program is well organized, progressive and consistent with potential plant hazards, and appropriate action has been taken on previous recommendations. A few observations of the reviewers are included in the final section of this report, and were discussed with Area Office personnel and GAT management at the conclusion of the review.

II. Description of Major Health Protection Considerations

With the exception of some minor auxiliary operations, the equipment in the UF_6 Feed Plant is currently in standby which has eliminated a major problem from an external and internal radiation exposure standpoint. Further, the reduction in the cascade improvement program has decreased the health protection problems associated with cell changeout, disassembly, and decontamination. Other than these changes, the principal health protection considerations associated with plant operations are essentially the same as described in the last program review report.

III. Description of Health Protection Programs

A. Responsibilities and Procedures

Line and staff responsibilities are the same as described in the previous review report.

The basic criteria, policies, functions, responsibilities, etc., which have wide application to GAT operations are contained in Standard Practice Procedures (SPP) which are issued by the Standard Practice Department. Closely allied with these SPP's

are more detailed Standard Operating Procedures (SOP) which are used for specified facilities and are associated with methods of performing job functions. The SOP's are prepared by the individual department concerned and are approved by management. These procedures are supplemented by Operating Specifications (OS) which are more detailed concerning job performance and health and safety aspects.

There are two types of procedures which are applied only to cascade operations, the Operating Cascade Memo (OCM) and Cascade Specifications (CS). The former deals with changes in cascade operations or equipment, while the latter is concerned with minor adjustment of cascade variables such as temperature or pressure settings. Special Work Permits, which are utilized for non-routine operations, include additional precautions necessary to accomplish the job in a safe manner.

B. Staffing and Training

There has been no significant change in the health protection staff and training programs as described in last year's report. It was noted that most hourly employees receive every three years a training course which includes not only health physics and emergency training, but also aspects of security, fire, general safety and criticality. Also, every employee receives a copy of "Guide to Safety", which delineates detailed information on the plant health protection practices.

C. Personnel and Area Monitoring

There has been no significant changes in the area monitoring program since the last health protection review.

Each GAT and AEC employee and plant visitor is issued a film badge on a monthly or quarterly basis, depending upon his exposure potential, as described in last year's report. ORNL type badges are used and contain Eastman type No. 2 (1 film - double emulsion) for beta-gamma determination; no neutron film is provided. An NBS primary standard radium sealed source is used for calibration of the film. The film calibration practices omit the use of a body phantom equivalent backscatterer which could result in the over estimation of gamma exposures up to 15%. Only one person out of 2200 monitored by the film badges received an exposure greater than 1 rad during 1961.

Approximately 3600 urine samples/year are obtained for urinalysis from about 50% of the plant population. In 1960 and 1961, 155 and 149 employees, respectively, had urinary excretion rates in excess of the plant permissible limit (.06 mg uranium/liter and/or total alpha activity of 9/d/m/100 ml.). There were five work restrictions (total - 57 days) in 1961 as compared to ten such restrictions (total - about 106 days) in 1960. Routine urine samples of selected employees are also analyzed for fluorides and mercury (about 450 special analyses per year), and as necessary they are also analyzed for lead, cadmium, selenium and other industrial toxicants.

About 1300 spot air samples are taken per year for the evaluation of control measures in the work environment, including routine work areas, new operations and material release areas where high uranium concentrations might be expected. In addition, air samples from 19 sampling stations are taken on a continuous basis for the determination of average airborne activity over an eight hour shift in general working areas. Routine monthly or quarterly surveys for alpha contamination are taken at about 80 locations. These are conducted so that continuous evaluations can be made of work locations of concern. Special surveys are also made of new operations or any material release area.

Each new facility is reviewed in detail prior to start-up and a written Health Physics-Industrial Hygiene Safety Analysis Report is prepared for operating supervision. This report includes a review of the hazards involved and specific recommendations, which are normally incorporated into associated SOP's, on the safety precautions required.

D. Waste Disposal and On-Site Monitoring

Solids contaminated with uranium below practical recovery limits and/or industrial toxicants are buried on site in eleven 10'x8'x10' trenches covered with a few feet of dirt. Four monitoring wells located around the area are sampled on a periodic basis. Contaminated obsolete equipment and scrap are sold in accordance with AEC Manual Chapters.

All GAT liquid waste streams drain into the Scioto River which flows into the Ohio River at Portsmouth, Ohio, which is about 25 miles downstream from the plant. Most waste systems are monitored at the generating facility (based on past and present experience) for industrial and radioactive toxicants prior to discharge, and at appropriate points on the major creeks prior to the confluence with the Scioto River about a mile from the plant. Allowable levels of uranium concentration for liquid effluents are based upon accountability standards, which are more restrictive than health protection requirements. Liquid waste systems of importance at GAT are described below.

One of the major waste streams originates from a 300,000 gallon raffinate holding pond which serves the X-705 Decontamination and Recovery Building, and various laboratory buildings. The wastes are passed through a lime neutralization pit to the holding pond which flows into the Little Beaver Creek and thence to the Big Beaver Creek which drains into the Scioto. A weekly grab sample is taken from the holding pond and analyzed for uranium, total alpha and fluorides.

Liquid waste from the Steam Plant and run-off water from the coal pile flow through a holding pond (for neutralization control) into the Salt Creek which discharges into the Scioto River about two miles (south) downstream from the plant. The primary concern with this waste stream is in controlling the pH (H_2SO_4 from sulfates in coal) between 6 and 8 at the top of the holding pond prior to discharge to Salt Creek.

The cascade recirculating water cooling system (capacity of a few hundred million gallons) is pretreated to assure proper water qualities, and the system is sampled periodically during the day for various chemicals, pH, Cr^{+6} and hardness. A 3 mgd loss of water occurs during blow-down operations and is discharged via a pipeline (about 1 mile) from the plant to the Scioto River. Although this loss from the recirculating system is essentially uncontaminated, weekly grab samples are analyzed for uranium and Cr^{+6}.

Miscellaneous low level liquid systems (normally well below PAL's) from other facilities are discharged directly into the Little or Big Beaver Creeks, and other small surface streams which flow into the Scioto River. Such liquid effluents (e.g. liquid from feed plant is neutralized in a neutralization pit) are treated, and monitored as necessary for uranium, fluorides, and other industrial toxicants, prior to release.

The sanitary sewer system also serves as a disposal system for a few facilities which discharge extremely low-level contaminated liquids. The sludge from the Sanitary Treatment Plant is monitored and used for fertilizer (on-site). The liquid effluent from the treatment plant is periodically spot checked for uranium and fluorides.

The storm sewer system discharges to the Little Beaver and other small surface streams. Random grab samples are taken monthly to confirm the very low-level concentrations in this system.

The process water is taken from the Scioto River about 1 mile upstream at the Piketon Water Treatment Plant and is analyzed for F, pH, Cr^{+6}, U, total alpha, and beta-gamma. Potable water is taken from deep wells on the plant and is chlorinated prior to use. The water is sampled and analyzed for uranium and fluorides, and samples are submitted to the State Health Department for bacteria count and other analyses.

Since operation of the Feed Plant has been discontinued, the principal sources of gaseous waste material are the X-326 Tops and Side Purge Units which are used for the removal of light contaminants from the Cascade. The inherent design of these facilities is such as to preclude significant losses of uranium to the atmosphere through the use of Acoustic Gas Analyzers which automatically control the UF_6 front by recycle valve operation. These units control the uranium content in the discharge gases to less than 5 ppm and are equipped with alarms to warn of excessive concentrations. In addition, the purge gases are discharged through sodium fluoride absorbers prior to release.

Other sources of gaseous waste material include the X-705 exhaust systems which are equipped with filters, and the incinerator unit which is used for disposal of contaminated combustible materials. This incinerator unit is equipped with a cyclone-type filter and is not a significant contributor to environmental contamination.

Detailed studies have been made of the wind conditions, vents, stack heights, etc., and it was calculated and verified by air samples that the maximum ground contamination generally occurs within the plant area. Monthly spot air samples are taken at 12 locations in the plant area and analyzed for uranium and total beta-gamma.

E. Off-Site Environmental Monitoring

The off-site environmental monitoring program at GAT is quite comprehensive and includes routine sampling of air, water, mud and vegetation within a six mile radius of the plant.

Report GAT-R-241 and an annual report entitled "Environmental Radiation Levels and Concentrations" describe in detail the off-site monitoring program and the sampling results. It is noted that an extensive background environmental vegetation and water survey was made at this site prior to plant start-up. Also one extensive water survey (from Chillicothe to Portsmouth) of the Scioto River has been made within the last several years.

Routine water samples are taken at 14 locations (2 Salt Creek, 6 Little and Big Beaver Creeks, 3 Scioto River, and 3 general plant drainage points) within five miles of the plant. The Scioto River is sampled about 4.5 miles downstream from the plant, at the point of the general plant discharge, and about 5 miles upstream from the plant. Mud and water samples are taken at these locations at least on a monthly basis and analyzed for fluorides, beta-gamma, uranium, and total alpha activity. Thus far, there have been no samples from the Scioto River which have exceeded national standards.

There are 17 locations within a six mile radius from the plant where air samples are taken on a monthly basis. These samples are analyzed for beta-gamma, alpha, uranium, fluorides, and other chemicals as necessary. Thus far, only one off-site air sample exceeded the MPC for continuous exposure for the general public. In addition to the air samples, vegetation samples are taken on a monthly basis for analyses and evaluation of the fluoride build-up in the environs, also-background radiation levels are measured monthly at these locations.

Consideration is being given to monitoring and/or sampling (air and water) on a continuous basis, and additional sampling (e.g., F, vegetation) at ground maximum which occurs in the controlled area. Such considerations will involve a detailed evaluation of the on-site and off-site environmental monitoring programs in order to determine equipment requirements and the minimum number of monitoring locations required.

F. Industrial Hygiene

The Industrial Hygiene program is carried out by the Industrial Hygiene and Health Physics Department which consists of 3 technical employees (including the supervisor), 3 technicians and 1 secretary. The staff members devote about 40% of their time to the industrial hygiene program and about 60% to health physics program. The supervisor reports to the Medical Director who reports to the Manager of the Industrial Relations Division.

Detailed studies of work factors such as heat, light and noise have been made in the past and are made for new operations and facilities. Also, included in the overall Industrial Hygiene program are audiometric examinations, consultations, education, compilations of medio-legal records, and similar functions which may affect the health of the employees but which do not fall in the field of safety and fire protection. Joint action is taken with safety and fire protection groups where problems are of mutual concern.

G. Nuclear Safety

1. Responsibility, Criteria and Training

The Nuclear Safety Section has been reduced from 2 staff members to essentially 1½ by assignment of dual functions to one staff member. The organization, functions, responsibilities and applied criteria are essentially unchanged from that indicated in previous reviews.

2. Plant Operation

The monthly cascade radiation scans for the detection of uranium deposition in cascade equipment have recently been extended to cover X-333 for complete plant coverage. The results of these scans are utilized in machine computations to reveal locations in which material build-up may be occurring, and such locations are summarized in a semiannual report to operations by the Nuclear Safety Section.

Two uranium accumulations at low U-235 enrichment were reported since the last ORO0 review. One of these occurred in an X-333 valve while the other was observed in an X-705 filter. The criticality potential in each case was slight, and appropriate action has been initiated to prevent recurrence.

The practice of conducting periodic training sessions at supervisory, foreman and operator levels is continuing and has been extended to other plant personnel. Training sessions for operating personnel are now underway on the use of the newly acquired neutron detector which will be used in conjunction with the radiation scans for estimating amounts of uranium deposited in cascade equipment.

H. Emergency Control

1. Organization and Planning

A nine member Emergency Planning Staff, which meets about every month, is comprised of representatives from the various plant divisions. This staff is delegated the responsibility to plan for emergencies, initiate training sessions, study instrumentation requirements, plan drills, and to make necessary recommendations where deficiencies or needs are indicated. The proceedings of this staff for Fiscal Year 1961 have been incorporated in a document, GAT-T-949.

The practice of holding a criticality drill for each shift for each major building per year is continuing. These drills have indicated a need for improved communications which has now been essentially corrected. A large scale criticality drill is scheduled for May 1962, in which representatives from the Fernald and Carbide Plants will participate as observers.

2. Criticality Alarms

The installation of the new cluster detection and alarm units which is approximately 96% complete will be a significant improvement over the old system. There are also plans to relocate some of the argon gammagraph units for the detection of high background radiation levels following a nuclear excursion.

3. Communications and Personnel Alert

In addition to the standard warning devices and communication systems for alerting personnel following an incident, a telephone alert system has been installed which will ring simultaneously the phones of eight key personnel and will interrupt any calls in progress.

A personnel accountability system has also been inaugurated and tested in a few divisions. This system will enable a more rapid determination of the thoroughness of personnel evacuation during emergency situations.

4. Emergency Control Center

The plant control facility will be used as the control center for emergencies, and it is here that key personnel will assemble to assist the shift superintendent who serves as plant emergency director. Currently, grid drawings of the major plant facilities are being prepared which, in conjunction with the existing radiation alarm panel, will aid in the determination of the location of the incident.

IV. Occupational Medical Program

A. Medical Staff and Equipment

In addition to the Medical Director, H. B. Lehman, the medical staff is comprised of one staff physician, three registered nurses, four male nurses (utilized for shift coverage), one X-ray technician who also serves as a laboratory technician, an administrative officer who also provides optical functions, and one secretary. Consultants are used in special or severe cases, and on a few occasions, GAT has used a consulting psychiatrist and the Portsmouth Receiving Hospital. GAT possesses medical equipment normally found at large industrial sites including an ambulance, basic metabolism equipment, a 200 KV X-ray unit, diathermy equipment, EKG unit, whirlpool bath, and similar facilities.

B. Pre-employment, Periodic and Termination Physicals

All GAT employees receive pre-employment and termination physicals. Periodic physicals are given to upper management personnel, supervisors, technical employees, and on-site AEC employees. Special annual physicals are given to approximately 150 employees who are routinely exposed to uranium and other hazardous industrial materials. Cafeteria workers are checked on a semiannual basis for contagious disorders and annually on blood and X-ray. Pre-employment, periodic and special annual physicals include the following:

1. Personal and occupational history.

2. Blood and urine analysis.

3. Chest X-ray (annually over age 40).

4. EKG (annually over age 40).

5. Audio examination. (periodic examination on selected basis).

6. Visual examination (all physicals and prior to renewing drivers' license).

7. Other examinations as necessary.

Checks on the above categories are given at any time upon request by employees. Terminating employees receive blood and urine checks including bio-assay, chest X-ray and other general examinations as indicated by previous medical records.

Employees absent from work for more than 7 days due to illness or those sent home by the Medical Department are required to check through the Medical Department before return to regular job assignments.

Tetanus and influenza shots are given on a voluntary basis. No specific medical studies are in progress although some evaluation has been made of the effectiveness of the flu shots.

C. Nuclear Accident Planning

Employees who might be exposed significantly in a nuclear accident will receive prompt medical attention for any physical injury and will be decontaminated (if necessary) at a designated location prior to admission to the GAT hospital. Blood sodium analyses will be made, and where this and other dosimetry information indicates an exposure of more than 200 rem, assistance will be obtained from appropriate installations such as ORINS.

V. Previous Recommendations

The action taken on recommendations made in the two previous ORO review reports are briefly summarized below:

A. Health Protection Program Review - May 1961

1. The criterion for assignment of employees to periodic physicals was re-evaluated as suggested, and it was concluded, based upon current criteria, work assignment and the degree of hazards involved, that present assignments for physicals are adequate.

2. Since the GAT Feed Plant has been shut down, the recommendation regarding additional effort for dusting control is no longer appropriate. However, it is noted that additional procedural controls were placed in effect prior to shut down.

3. As recommended, greater emphasis has been placed upon review of procedures at GAT, particularly those relating to emergency situations. In general, studies have been made of those procedures requiring modification and of those operations in which procedures are yet to be issued. The latter category has been included in appropriate sections of procedure manuals and these are being issued as work loads permit. It is observed that the updating and preparation of the multitude of procedures at GAT require considerable coordinated effort of operations, health and safety staff groups, and the Process Engineering Department.

4. The recommended review of procedures for the control of geometrically unsafe containers in the X-705 Decontamination Building has been given careful attention. Trash or scrap containers have been perforated at the base, as recommended by the Criticality Consultants, to limit solution height to a safe slab depth in event these containers were inadvertently used in the process. Geometrically unsafe containers are used only in specified locations where known U-235 enrichments and uranium concentrations preclude any criticality potential.

B. Nuclear Safety Program Review - October 30 - November 1, 1961

1. Although no provisions have been made for the replacement of the X-705 unsafe batch dissolvers, as suggested by both the Criticality Consultants and the AEC reviewer, the general use of these tanks has been limited by the utilization of other X-705 equipment of safe design. For example, a safe digester system is now used for the dissolution of contaminated alumina and a safe slab system is used for leaching of ash material. Currently, the batch tanks are used primarily for clean-up operations involving normal uranium from the Feed Plant. It is anticipated that these tanks will not be required routinely for enriched operations in the future. Further, provisions have been made to assure that solutions from other X-705 systems cannot be transferred inadvertently to these units.

2. Currently, engineering studies are underway for the provision of automatic valving control in the condensate drain system at the Feed Vaporization Facility. This recommendation was made to assure containment of uranium solution in a safe geometry in the event of a UF_6 release.

3. The suggested analysis of dross and slag from aluminum blade melting operations has been performed, and nuclear safety evaluations for residual uranium will be made by GAT if this operation is to be continued.

4. In response to the Criticality Consultant's recommendation (endorsed by the AEC reviewer) of filling the X-705 unsafe entrainment separators with a nuclear poison, one such unit has been filled with boron containing raschig rings. Further, a new unit of safe dimensions has been ordered for evaluation, and, if satisfactory, similar units will be installed on all evaporator units in X-705. However, if the new unit is not satisfactory, the filling of the existing entrainment separators with raschig rings will be carried to completion.

VI. Observations.

A. The GAT Health Protection Program is considered effective and consistent with existing plant hazards. In particular, the current practice of preparing a comprehensive annual health protection report is quite beneficial in making periodic appraisals by both GAT and AEC. Also, the off-site environmental monitoring program is commended for its coverage and scope.

B. The evaluations made by the Nuclear Safety and Emergency Planning Staffs regarding nuclear accident prevention and control reflect the continued interest by GAT management in achieving the maximum personnel protection from a critical incident.

C. The proposed addition of one professional staff member to the IHHP Department is considered adequate to alleviate the need previously noted for additional staff assistance in technical evaluations and studies.

D. In view of the limited health protection staff, the responsibilities and cooperation of the operating groups assume salient consideration in the overall programs. The following observations are offered to assist in the maintenance of an effective program which depends to a large extent on line supervision:

1. The various procedures issued at GAT are considered to be an effective tool for efficient and safe job performance, and the fact that most of these procedures are reviewed by appropriate staff groups prior to issuance is considered highly desirable. To achieve greater coverage in this regard, the following suggestions are offered:

a. Continued emphasis should be placed on issuing procedures for new operations, and updating old procedures as required.

b. The review of procedures by health and safety staff groups should be more formalized with sign-off by appropriate supervision.

c. The health protection program is in conformance with appropriate AEC Manual Chapters. Continued efforts should be made to assure that appropriate AEC Manual Chapter information on health protection is incorporated in SPP's and/or SOP's.

2. The fact that health protection training programs have not been de-emphasized with the overall reduction of plant personnel is commended, and it is felt that these programs should not be reduced in magnitude or scope.

3. A major factor in the evaluation of line supervisors should include their knowledge, interest, and effectiveness in health protection matters during the annual appraisal of their overall performance.

E. The film badge program is adequate and extensive. It is noted that everyone is issued a film badge for both routine and accident monitoring purposes; although from a health protection standpoint, recognized standards (NCRP, 10 CFR Part 20) require routine monitoring of only those personnel who receive, or are likely to receive, exposures in excess of 10-25% of the maximum permissible levels. It is suggested that the personnel monitoring coverage and techniques which have been in effect for over one year be re-evaluated.

R. L. Hervin
Health Physicist

W. A. Johnson
Nuclear Safety Specialist

6/15

UNITED STATES
ATOMIC ENERGY COMMISSION

Portsmouth, Ohio

IN REPLY REFER TO:
O:WK

MAY 1 1962

Goodyear Atomic Corporation
Portsmouth, Ohio

Attention: Mr. G. H. Reynolds, General Manager

Subject: GAT HEALTH PROTECTION REVIEW - MARCH 1962

Gentlemen:

We are forwarding a copy of a memorandum from Mr. S. R. Sapirie dated April 23, 1962, subject as above, together with five copies of the report prepared by the 1962 Health Protection Reviewers.

We are pleased to note that the comments made by the reviewers are favorable in all respects, and that the reviewers are satisfied concerning previous recommendations they had made.

You will note that we have been asked to furnish comments to Oak Ridge not later than June 30, 1962, concerning the reviewers' observations, conduct of the review, and the review report. We should appreciate receiving comments of this nature from Goodyear sufficiently in advance of June 30 to permit us to meet the dead line.

Very truly yours,

for Walter Locke, Jr.
Robert H. Thalgott
Manager, Portsmouth Area

Enclosures:
1. Cy memo fr SRS dtd 4/23/62
2. Report (5 cys)

CC w/encs. DWD
CRM.

GBS
5/4/62

GOODYEAR

Goodyear Atomic Corporation

P.O. Box 628

Portsmouth, Ohio

A SUBSIDIARY OF THE GOODYEAR TIRE & RUBBER COMPANY
ACTING UNDER U. S. ATOMIC ENERGY COMMISSION CONTRACT AT-(33-2)-1

PLANT SITE:
PIKE COUNTY, OHIO

TELEPHONE:
WAVERLY, OHIO

TELEGRAMS:
WUX-PORTSMOUTH, OHIO

APR 9 1962
GAT-212-62-56

U. S. Atomic Energy Commission
Portsmouth, Ohio

Attention: Mr. R. H. Thalgott
Manager, Portsmouth Area

Subject: COMMENTS ON DRAFT REPORT OF MARCH 6-8
AEC HEALTH PROTECTION REVIEW

Gentlemen:

After a review of the subject report, the following comments are submitted for consideration:

1. Page 2, Part III-A

Neither the Standard Practice Procedures (SPP) nor the SOP are prepared by the "Engineering Division"; there is no such group in the GAT organization. The SPP's are management decisions and are issued by the Standard Practice Department. The SOP's are prepared by the individual department concerned and approved by management. The Operating Specifications are prepared by the Process Engineering Department.

2. Page 3, Part B -- "Staffing and Training"

The refresher health protection training course is presented to most hourly employees. This course includes not only health physics and emergency training, but also aspects of security, fire, general safety, and criticality.

3. Page 3, Part C -- "Personnel and Area Monitoring"

In reference to the body phantom equivalent back-scatters, it is felt that the radiation levels encountered in our operations does not require the use of such technique. If the gamma exposure is overestimated, this is in effect a "fail safe" direction.

4/10/62

4. Page 7, next to last paragraph.

In reference to the storm sewer system discharge into the Little Beaver and other surface streams - random grab samples are taken monthly, not quarterly.

5. Page 14, Paragraph B -- "Periodic Physicals"

Periodic physicals are given to upper management personnel, supervisors, technical employees, and on-site AEC employees. The special annual physicals are given to approximately 150 employees who are routinely exposed to uranium and other hazardous industrial materials.

All pre-employment examinations include audio examinations. However, on periodic and special physicals, the frequency of the audio examination is determined by previous audio results and noise exposure record. All employees exposed to noise are in the hearing conservation program. Visual examinations are included in all physicals and are conducted prior to renewing driver's license.

Several pencilled notations have been inserted, in the enclosed draft, where either slight corrections are necessary or typographical errors were noted.

Very truly yours,

GOODYEAR ATOMIC CORPORATION
Original Signed by
C. R. Milone,
DEPUTY GENERAL MANAGER

G. H. Reynolds
General Manager

D W Doner
HBL

B.K. BK:HBL:hg

Enclosure

cc: G. H. Reynolds w/o enclosure
D. W. Doner w/o enclosure
H. B. Lehman, M.D. w/o enclosure
B. Kalmon w/o enclosure

4/9

UNITED STATES
ATOMIC ENERGY COMMISSION

IN REPLY REFER TO:
O:WK

Portsmouth, Ohio
APR 5 1962

Goodyear Atomic Corporation
Portsmouth, Ohio

Attention: Mr. G. H. Reynolds, General Manager

Subject: DRAFT REPORT OF MARCH 6 - 8 HEALTH PROTECTION REVIEW

Gentlemen:

We are forwarding for your review and comments a draft copy of the ORO Health Protection Review Report covering a visit made to the Portsmouth plant by R. L. Hervin and W. A. Johnson on March 6 - 8, 1962.

It is desired that we receive your comments no later than noon, April 9, 1962.

Very truly yours,

Robert H. Thalgott

Robert H. Thalgott
Manager, Portsmouth Area

Enclosure:
Cy subject rpt.

cc w/enc. DWH
CRM

4/6/62

cc: G. H. Reynolds
C. R. Milone
D. W. Doner

GOODYEAR

Goodyear Atomic Corporation

P.O. Box 628
Portsmouth, Ohio

A SUBSIDIARY OF THE GOODYEAR TIRE & RUBBER COMPANY
ACTING UNDER U. S. ATOMIC ENERGY COMMISSION CONTRACT AT-(33-2)-1

PLANT SITE:
PIKE COUNTY, OHIO

TELEPHONE:
WAVERLY, OHIO

TELEGRAMS:
WUX-PORTSMOUTH, OHIO

U. S. Atomic Energy Commission
Portsmouth, Ohio

Attention: Mr. [illegible] Anderson
Manager, Portsmouth Area

Subject: [illegible] - [illegible]

Gentlemen:

A review of the subject report has been made in accordance with your request of May 1, 1962, with particular attention to the reviewers' observations contained on pages 13 and 14.

Our comments concerning these observations are as follows:

VI. <u>Observations</u>

A. It is our intent to continue preparation of a health and safety activities report annually.

B. No comment required.

C. For your information, we have obtained the services of an additional Health Physicist who is scheduled to report for work in July of this year.

D.1.a. Continued emphasis is being placed on issuing procedures for new operations and updating old procedures as work loads permit.

D.1.b. As suggested, and following discussions with Process Engineering Department personnel, the existing internal procedures [illegible] to insure [illegible] Operating Specifications, [illegible] Specifications, etc., are routed to affected health and safety groups for review and approval. The procedure has been formalized, through revision of the affected forms, to the extent of providing for signature by [illegible] health and safety [illegible] personnel.

D.1.c. A continued effort will be made to assure that appropriate AEC Manual Chapters on health protection are incorporated in Standard Practice Procedures, Standard Operating Procedures, and other internal procedures, as required.

D.2 It is not our intent to de-emphasize health protection training programs in the future. We have just concluded the presentation of a Protective Equipment and Practices Refresher Program to hourly personnel and selected salaried personnel. This was a three-hour program and included discussions on Criticality, Fire Protection and Prevention, Industrial Hygiene and Health Physics, Radiation Alarm Systems, "Hazardous Work Permit" and "Electrical Work Permit" Procedures, Protective Equipment, Security, etc.

D.3 The suggestion of the reviewers in this regard has been noted.

E. Our personnel monitoring coverage and techniques have been re-evaluated, as suggested. We are aware that personnel other than those required from a health protection standpoint are included in our film badge program. At the time ORNL-type badges were issued it was management's decision that all personnel would be included in the program. This decision was based on the fact that our film badges do not leave plant site. Therefore, the film badge results would serve as a reasonably accurate record of the exposures incurred on the job. It was our opinion that under these circumstances negative film badge results have definite medical-legal value. Since these conditions are still present, we see no apparent need for changing our film badge procedure at the present time.

Your attention is called to Item B "Nuclear Safety Program Review - October 30-November 1, 1961," paragraph 2, on page 12. A clarification in wording is suggested, as follows: ". . . This recommendation was made to assure containment of uranium solution in X-342 (Feed Vaporization) and to prevent the flow of uranium solutions into the unsafe geometry of the plant sewer system. Containment in X-342 will not preclude the uranium solution from being in unsafe geometry."

Very truly yours,

GOODYEAR ATOMIC CORPORATION

ORIGINAL SIGNED BY
G. H. REYNOLDS

G. H. Reynolds
General Manager

ALM:jr

UNITED STATES GOVERNMENT

Memorandum

TO: R. H. Pratt, Area Manager
Portsmouth Area Office

DATE: April 23, 1962

FROM: S. R. Saplris, Manager
Oak Ridge Operations, Oak Ridge

SUBJECT: GAT HEALTH PROTECTION REVIEW - MARCH 1962

ORB:RLR

Six copies of the subject report are enclosed for your information and action. The cooperation and assistance of the Area Office and GAT personnel in the conduct of the review are appreciated.

The GAT Health Protection Programs continue to be well organized, progressive and consistent with potential plant hazards. Appropriate action has been taken on previous recommendations. A few observations of the reviewers are included in the final section of the report. Your comments with regard to these observations, conduct of the review, and the review report are requested by June 30, 1962.

S. R. Saplris

Enclosures:
Report (6)

CC: R. C. Armstrong
J. D. Donovan, w/cy of Encl.
H. M. Roth

UNITED STATES
ATOMIC ENERGY COMMISSION

IN REPLY REFER TO:
O:WK

Piketon, Ohio
SEP 8 1965

Goodyear Atomic Corporation
Piketon, Ohio

Attention: Mr. G. H. Reynolds, General Manager

Subject: REPORT OF THE ANNUAL HEALTH PROTECTION REVIEW OF PORTSMOUTH GASEOUS DIFFUSION PLANT, MAY 1965

Gentlemen:

Enclosed are five copies of the subject report for your information and action.

It is desired that GAT proceed with the implementation of matters covered by the recommendations unless sound reasons exist that a recommendation is not warranted in whole or in part. In any event, your comments regarding the conduct of the review, the content of the report, and the detailed plans for implementing or otherwise disposing of the recommendations are desired by October 13, 1965.

Your cooperation in complying with this request will be appreciated.

Very truly yours,

R. V. Anderson
Manager, Portsmouth Area

Enclosure:
Subject Report (5 cys)

HEALTH PROTECTION REVIEW
PORTSMOUTH GASEOUS DIFFUSION PLANT
MAY 1965

I. Introduction and Summary

The health protection program review of the Portsmouth Gaseous Diffusion Plant, operated by the Goodyear Atomic Corporation, was conducted on May 4-6, 1965, by representatives of the ORO Research and Development Division. The last review was conducted in March 1964. All phases of health protection, including the recommendations of the previous review, were generally considered.

The health protection program appears to be satisfactory and consistent with the problems associated with plant operations. Included at the end of this report are the reviewers' observations and recommendations for improvement of the program.

II. Implementation of Previous Recommendations

A. Recommendation in regard to handling laboratory salvage solutions.

Action: GAT reevaluated the handling of laboratory salvage solutions, and the decision was made to collect these solutions in containers which are geometrically safe for all U-235 enrichments.

B. Recommendation that film badge change-out cycle be altered from monthly to quarterly.

Action: The change-out cycle was so altered, effective the beginning of FY 1965.

C. Recommendation in regard to establishing criteria for use and maintenance of filters in hood exhausts systems.

Action: GAT has adopted a policy of "no filters" for laboratory hoods and stacks. This requires special administrative control of hood use and roof access.

D. Recommendation concerning the respiratory protection program.

Action: The respiratory protection program was reviewed, and a refresher training course covering proper usage of all respiratory protection equipment was initiated for affected employees.

III. Observations

A. During the past year a net reduction of one employee has occurred in the Industrial Hygiene and Health Physics Department. The impact of this, however, appears to be greater than normal since two employees, one having considerable technical competence, were lost and the replacement from another plant division is being trained and will quite naturally require some time to become adequately familiar with department procedures and activities. This has resulted in a decreased program, particularly in area surveillance.

B. All phases of the fluorination process in the proposed oxide conversion facility where reconcentration of nonvolatile transuranic contaminants could occur have not been evaluated. This evaluation is particularly important in considering the feasibility of a transuranium alpha specification of 21,000 d/m per gram of uranium. The new oxide conversion facility is designed to feed the generated ash directly to a separate fluorination tower rather than to recycle with the oxide. Since no experience is available to suggest reconcentration factors for this new step in processing, a thorough study of the problem appears advisable to guarantee a design adequate for health protection.

C. A review of operations in the present oxide conversion facility revealed marginal capability to provide for adequate health protection under present production demands. An increase in work restrictions since January 1, 1965, due to internal uranium exposure is indicative of the need for improved control. The problem of accurately defining internal uranium exposures from enriched oxides by the urinalysis method further suggests the advisability of in vivo counts to verify lung exposures.

D. The need for additional continuous air monitoring capability is concurred in by the reviewers. The acquisition of three air monitors, presently on order, should be helpful in maintaining an adequate surveillance program with the limited staff.

E. The Nuclear Engineering Staff has returned to a full two-man effort, which appears compatible with the level of the nuclear safety control program required for the Portsmouth Gaseous Diffusion Plant.

F. The internal nuclear safety review conducted by GAT is an excellent example of introspection for strengthening the nuclear safety control program. The recommendations of the Committee appear to be apropos. Of particular interest is the reduction of portable nuclear safe containers for solutions in X-705, through the installation of fixed, large capacity, safe storage for solutions to reduce the criticality potential. However, there continue to be many satellite non-continuous recovery operations in X-705 requiring the storage and handling of numbers of portable containers. The criticality potential could be further reduced by the installation of nuclearly safe, continuous operation type recovery equipment.

G. The returns of uranium from private industry have increased significantly with GAT receiving the higher enrichments. However, GAT appears to be safely handling and storing the material in spite of the fact that the materials arrive on site with a minimum of advance notice.

IV. Recommendations

A. Based on Observation "B", increased and complete consideration should be given to the health protection aspects of handling recycle uranium in the proposed oxide conversion and similar facilities.

B. In vivo counts should be obtained for those employees in the oxide conversion facility who have had credible potential for high lung exposures.

C. The satellite non-continuous operations in X-705 as discussed in Observation "F" above should be replaced with nuclearly safe, continuous operation type recovery equipment as soon as practicable.

Reviewers: William A. Pryor W. T. Thornton

W. A. Pryor
Nuclear Safety Specialist

W. T. Thornton
Health Physicist

GOODYEAR
Goodyear Atomic Corporation
P.O. Box 628
Piketon, Ohio 45661
A SUBSIDIARY OF THE GOODYEAR TIRE & RUBBER COMPANY
ACTING UNDER U. S. ATOMIC ENERGY COMMISSION CONTRACT AT-(33-2)-1
TELEPHONE: PIKETON, OHIO AREA CODE 614-289-5511 TWX: 614-340-0800 TELEGRAMS: WUX-PIKETON, OHIO

Refer to O:WK

U. S. Atomic Energy Commission
Piketon, Ohio 45661

Attention: Mr. R. V. Anderson
Manager, Portsmouth Area

Subject: COMMENTS ON REPORT OF ANNUAL HEALTH PROTECTION REVIEW OF PORTSMOUTH AREA GASEOUS DIFFUSION PLANT - May 1965

Gentlemen:

The subject report has been reviewed by GAT personnel concerned and the following comments are presented:

Implementation of Previous Recommendations:

As reported to you in our August 4, 1965 letter, Item II. C, on page 2, states - "Action: GAT has adopted a policy of 'no filters' for hoods." This is not entirely correct, since we do use filters in the following locations:

1. Seal Dismantling Exhaust System - X-705
2. Compressor Dismantling Exhaust System - X-705
3. The 33 Compressor Dismantling Pit Exhaust System - X-705
4. X-326 Sampling Facility Exhaust System - X-326

Recommendations:

A. A coordinated effort for the design of the new Oxide Conversion facility is being carried on by Plant Engineering, Technical Division, Health Physics, and the Production Division. A Production Division engineer has been assigned to coordinate with Plant Engineering in the design and installation of the new facility. Discussions are being held concerning the development of various design features and will continue throughout the project.

In reference to the recycling of ash and the reconcentration of non-volatile transuranic contaminants, this design problem will receive special attention. Whatever scheme is decided upon will be followed closely during the initial operational

SEP 1955

Recommendations (contd)

period to make sure that personnel are adequately protected and that the transuranic contaminants are properly disposed of.

B. In vivo counts have been and are being obtained for those employees working in the Oxide Conversion facility. Original results of counting of the most suspect employees indicated inadequate protection of personnel working in Oxide Conversion. We have subsequently taken many stringent measures to control exposure of personnel to uranium oxide and believe that adequate protection is now maintained.

C. Always-safe storage facilities and a continuous dissolver with associated equipment are being planned for installation in FY66. They are both included in the approved FY66 Budget, and we plan to complete the installations as early in the fiscal year as practicable.

Very truly yours,

GOODYEAR ATOMIC CORPORATION

G. H. Reynolds
General Manager

DWD:clw

cc: G. H. Reynolds ✓
D. W. Doner
R. M. Rutherford
H. B. Lehman, M.D.

DW Doner
Consult with Lehman
Rutherford

GOODYEAR
Goodyear Atomic Corporation
P.O. Box 628
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A SUBSIDIARY OF THE GOODYEAR TIRE & RUBBER COMPANY
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TELEPHONE: PIKETON, OHIO AREA CODE 614-289-5511 TWX: 614-340-0800 TELEGRAMS: WUX-PIKETON, OHIO

SEP 13 1966

Refer: O:ERS

U. S. Atomic Energy Commission
Piketon, Ohio 45661

Attention: Mr. R. V. Anderson
Manager, Portsmouth Area

Subject: ANNUAL HEALTH PROTECTION REVIEW - MAY 1966

Gentlemen:

In your letter of August 15, concerning this review, it was suggested that our comments on the content of the report and our plans for implementation of recommendations be in your hands by September 15, 1966. Our comments are as follows:

Item III, Observations

A. This indicates that Goodyear should continue to require alert Health Physics field surveillance in order to assure adequate control of surface and airborne contamination.

We have expended considerable effort in this area, and since the review by Messrs. Johnson and Thornton the Seal Dismantling Room has been declared a "hot line" area and a mandatory respiratory protection area. This was done because of the results obtained from Health Physics field surveys indicating the need. The ash calciner and the rod mills have been moved from an open area into the Seal Dismantling Room. Continuing effort is being expended in pinpointing our sources of contamination in order that they may be eliminated at the point of origin. We are also continuing to investigate and place into practice improved methods of decontaminating.

Housekeeping in certain areas of X-705 continues to be somewhat of a problem due to the fact that process equipment of a wide variety of sizes, shapes, and number of parts are continually being dismantled in preparation for decontamination. Because of the very nature of this work and the continuously changing flow of equipment through it

[illegible] FOR RELEASE BY:
[illegible] M. Barnhardt

Item III. Observations, A (contd)

causes one to gain the impression that the operation and associated housekeeping is disorderly. However, efforts are being made to have major parts as well as small components kept as orderly as is practical during the dismantling and decontamination operations, even though it is a continuous and ever changing pattern. A painting program has been outlined for the areas in this building and is scheduled to start late this fall.

C. In the past it was noted that our environmental monitoring program was satisfactory. During the 1965 review it was suggested that we study our program from the standpoint of reducing its scope. (Object: Cost reduction?) After study it was concluded that the same program should be continued. Now it seems we are to ignore cost.

Random sampling as to time, direction, location, and meteorological conditions in locations in all directions is a general procedure in the industry; by this method statistical bias is minimized. Out of a total of 215 samples collected during 1965 only two were above the AEC concentration guides. While there was an increase for the year (5% MPC to approximately 15% MPC) it must be remembered that the AEC concentration guide is applicable on an annual basis--not on a single sample value.

The purpose of random sampling as an off-plantsite monitoring device is defeated by "reacting to measured environmental increases" and there is no intention of encouraging our personnel to behave in this fashion.

D. This data is being collected and appropriate summary will be prepared.

E. The GAT external monitoring practices have been reviewed with the GT&R legal counsel, and we are deferring to their recommendations; viz., all exposure data on all employees is to be maintained, including negative results.

J. Regarding the horizontal stacking of empty cylinders on transfer dollies, we can report that this practice is no longer in use.

We have a situation in the H Area regarding mixing of fissile and non-fissile materials in designated fissile storage areas which may not be completely understood. We have rectified the point regarding identifying all containers stored in the area including containers of non-fissile material. The area is one of our large basic uranium storage facilities and is also the location in which we make up non-uranium bearing solutions. It is our policy to always properly identify all containers in this area.

Item IV. Recommendations

A. Prior to and simultaneously with the review, thought has been given to increasing the background environmental program. A continuous airborne recorder has been installed in the optimum location. Two additional units will be installed in locations of major interest. Concurrently, an engineering study has been initiated to determine the feasibility for monitoring liquid effluents for toxic chemical and other pollutants.

B. We believe this was adequately covered in Item III, paragraph J.

Very truly yours,

GOODYEAR ATOMIC CORPORATION

ORIGINAL SIGNED BY
G. H. REYNOLDS

G. H. Reynolds
General Manager

DWD:RMR:HBL:cly

cc: G. H. Reynolds
R. M. Rutherford RMR
D. W. Doner
H. B. Lehman, M.D.

UNITED STATES
ATOMIC ENERGY COMMISSION

IN REPLY REFER TO:
O:ERS

Piketon, Ohio
AUG 15 1966

Goodyear Atomic Corporation
Piketon, Ohio

Attention: Mr. G. H. Reynolds, General Manager

Subject: ANNUAL HEALTH PROTECTION REVIEW - MAY 1966

Gentlemen:

Enclosed are five copies of the report prepared as a result of the annual health protection review of Portsmouth Gaseous Diffusion Plant which was conducted on May 23-24, 1966.

It is desired that Goodyear proceed with implementation of matters covered by the recommendations unless sound reasons exist that a recommendation is not warranted in whole or in part. In any event, your comments regarding the conduct of the review, content of the report, and the detailed plans for implementing or otherwide disposing of the recommendations are desired by September 15, 1966.

Very truly yours,

R. V. Anderson

R. V. Anderson
Manager, Portsmouth Area

Enclosure:
Subject Report (5 cys)

HEALTH PROTECTION REVIEW
GOODYEAR ATOMIC CORPORATION
MAY 1966

I. Introduction and Summary

The annual appraisal of the Goodyear Atomic Corporation health protection program was conducted on May 23-24, 1966, by representatives of the Research and Development Division, ORO. The appraisal covered, in general, all phases of health protection and emphasized nuclear safety, operations in Building X-705, environmental pollution and related monitoring programs. A survey of man year effort and cost attributable to the GAT health protection program revealed reasonable alignment with other ORO contractors and while GAT costs are somewhat higher than other gaseous diffusion plants, it is felt that this is justified by the higher relative hazard of materials handled.

The health protection program continues to be satisfactory. Sections III and IV of the report contain the reviewers' observations and recommendations for program improvement.

II. Implementation of Previous Recommendations

A. Recommendation that increased consideration be given to health protection aspects of handling recycle uranium in the new oxide conversion facility:

Action: Plans for the facility have been reviewed and appear to provide for adequate containment for the anticipated processing of recycle uranium as well as for highly enriched non-recycle materials.

B. Recommendation regarding the in vivo counting of employees working in the oxide conversion facility:

Action: Of the employees with a credible potential for significant lung exposure all have been counted in the Y-12 in vivo facility. Eight chemical operators have been found with exposures in excess of the guides in AEC 0524 Appendix and have been reported.

C. Recommendation that the satellite non-continuous operations in X-705 be replaced with nuclearly safe, continuous operation type recovery equipment as soon as practicable.

Action: A proposal was submitted to the AEC and a directive for equipment design has been issued. The design is expected to be completed within this calendar year.

III. Observations

A. The Industrial Hygiene and Health Physics Department has added one employee in the past year which has resulted in an on-site surveillance program of increased technical capability and scope. Operations of the type carried out in Building X-705, both in the decontamination side and in the conversion facility, will continue to require alert health physics field surveillance to assure adequate control of surface and airborne contamination. Housekeeping as noted in this area was marginal and not conducive to good control.

B. Once recognized, the problem of exposure control in the X-705 Oxide Conversion Facility was attacked vigorously. In view of the inadequacy of process equipment to provide containment for highly enriched operations, the overall contamination control achieved was remarkable. As discussed during our visit continued care will be exercised during dismantling and decontamination activities.

C. A rather detailed review of GAT environmental monitoring data and practices was made. It is observed that a significant increase in air sample results off-site occurred in 1965. Some individual samples, it was noted, were above MPC levels and on occasion such samples were upwind of the plant. Probably these increased air levels were caused by effluents from the oxide conversion operation. It was not apparent to the reviewers that the IH&HP program reacted adequately to measured environmental increases. Forty minute monthly grab samples continued to be taken without particular regard for wind direction and, in such instances, without assurance that samples so collected were representative of plant contribution to the general environment.

D. Detailed consideration was given to liquid and gaseous effluents. GAT has prepared a thoughtful summary of liquid effluents which is reported in correspondence from G. H. Reynolds to R. V. Anderson dated March 21, 1966, on the subject of water pollution by Federal activities. Additional data indicates that chromate concentration in the Scioto River at the outfall of the blowdown conduit averaged 1.07 mg/l for 1965 based on monthly grab sampling. The next sample point, about five miles downstream, indicates an annual average of 0.014 mg/l. Regarding gaseous effluents it was agreed that the IH&HP Department would collect and summarize information on in-plant sources of atmospheric pollution. This compilation would include a description of the source in terms of types of contaminants, exhaust volumns and concentration data.

E. External radiation monitoring of GAT employees shows only one employee with an annual exposure greater than 1 rem and this was less than 2 rem. Ten employees sustained internal uranium lung exposures greater than one-half the permissible level and of these, eight were reportable as overexposures. It is recognized that the external radiation exposure potential at GAT is limited as reflected in reports over the past several years. It would appear appropriate and timely to review personnel monitoring practices to effect any economies which might be indicated.

F. The utilization at GAT of a special committee to carry out evaluations of practices in the Production Division involving handling of fissile materials appears to have enhanced criticality control and increased management support in the overall nuclear safety program. The fact that this committee makes field inspections supports the nuclear safety staff audit program and is an adjunct to the recognition of problem areas as well as to the resolution of nuclear safety problems. Committee activities and recommendations have been appropriately documented.

G. An administrative change in the nuclear safety program is the addition of Drs. R. L. Macklin and A. D. Callihan of ORNL as consultants to the Plant Criticality Committee. They will serve in the capacity of an approvals committee where significant changes in operating criteria or limits may be involved.

H. No significant incidents in nuclear safety control have been reported since December 1964, and deviations from existing approvals have been minor.

I. Technical criticality evaluations have mostly been associated with establishing fill limits and isotopic limits for 8" I.D. and 12" I.D. UF_6 cylinders.

J. In the previous ORO annual appraisal, it was observed that the satellite non-continuous operations in Building X-705 required the storage and handling of numbers of portable containers. Since continuous operation recovery equipment has not yet been installed, this condition still exists. However, of significance is the fact that during the course of the ORO appraisal, a number of containers were observed stored in locations not identified as designated storage positions. Further, a practice of horizontal stacking of empty cylinders on transfer dollies between upright holders containing cylinders, of uranium solution were observed. Although no criticality potential is involved in this instance, this practice could lead to breakdown of administrative control and may be conducive to stacking of filled or partially filled cylinders since the empties were not identified as such and the closure caps were intact. In addition, the mixture of both fissile and non-fissile materials in a designated fissile storage location were observed with the non-fissile material not identified. This again is conducive to administrative error.

IV. Recommendations

A. It is recommended that the environmental monitoring program be reviewed to assure that it is adequately comprehensive and that it incorporates the flexibility necessary to react to changes in plant and environmental conditions.

B. It is recommended that appropriate action be taken to correct the portable container handling and storage problems pointed out in Observation "J".

Reviewers: W. A. Johnson
Nuclear Safety Specialist

W. T. Thornton
Health Physicist

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Reviewers: W. A. Johnson
Nuclear Safety Specialist

W. T. Thornton
Health Physicist

APPROVED FOR RELEASE BY:
M. M. Barnhardt

GOODYEAR

Goodyear Atomic Corporation

P.O. Box 628
Piketon, Ohio 45661

A SUBSIDIARY OF THE GOODYEAR TIRE & RUBBER COMPANY
ACTING UNDER U. S. ATOMIC ENERGY COMMISSION CONTRACT AT-(33-2)-1

TELEPHONE: PIKETON, OHIO AREA CODE 614-289-2331 TWX: 614-340-0800 TELEGRAMS: WUX-PIKETON, OHIO

FEB 18 1969

U. S. Atomic Energy Commission
Piketon, Ohio 45661

Attention: Mr. R. V. Anderson
Manager, Portsmouth Area

Subject: HEALTH PROTECTION APPRAISAL (DRAFT)
GOODYEAR ATOMIC CORPORATION - NOVEMBER 1968

Gentlemen:

We have the following comments on the draft of the Health Protection Appraisal of November 1968.

Page 3-4 - Oxide Conversion Facility, X-705

Page 4, lines 4 and 5, states, "The present practice of having a pressure relief system which vents to the room is questionable".

Although the fact is correct, there is an additional factor not considered in that the associated pressure relief valves have absolute filters prior to direct discharge.

Page 5-6, paragraph F - UF_6 Sampling and Shipping Center, X-746

Page 6, line 4, leads one to believe that there is neither a routine schedule for contamination monitoring nor a practice of recording the results of such surveys.

This is not correct. The Industrial Hygiene and Health Physics Department monitors the area approximately every month and the results are recorded. The inspector asked operations if they monitored and recorded the results routinely and were given a negative answer. I believe the inspector misinterpreted the answer given by the operations supervisor.

Page 6, paragraph G - Industrial Hygiene Noise Surveys

It is stated that they are made on a "complaint" basis about once per year rather than on a routine schedule. This is true for 1968; however, routine surveys have been made prior to 1968.

APPROVED FOR RELEASE BY:
M. M. Barnhardt

Page 10-11 - Process Discharge Surveillance

The station designated as 3(b) is sampled on a fixed time frequency. In this location a proportional composite sample is not collected but a fixed quantity is collected at a fixed time interval.

Very truly yours,

GOODYEAR ATOMIC CORPORATION

ORIGINAL SIGNED BY
G. H. REYNOLDS

G. H. Reynolds
General Manager

LEF:BK:cly

cc: G. H. Reynolds
L. E. Fuller
H. B. Lehman, M.D.
Ben Kalmon

draft

Factual ?

HEALTH PROTECTION APPRAISAL
GOODYEAR ATOMIC CORPORATION
NOVEMBER 1968

I. Purpose and Scope

The annual health protection appraisal of the Goodyear Atomic Corporation Gaseous Diffusion Plant was condu-ted November 19-22, 1968, by Messrs. H. W. Hibbitts and J. F. Wing, Health and Nuclear Safety Branch, Safety Division, ORO. A review in the areas of industrial hygiene, health physics, and environmental pollution was made including visits to several of the relevant support facilities and effluent disposal areas. Nuclear criticality safety review, normally coincident with the regular GAT annual appraisal, was deferred due to ORO staff commitments and will be rescheduled in early 1969.

II. Summary

Within the scope of this review, the plant has continued to be operated in a safe manner. The recommendations resulting from this appraisal, although not implying an unsafe working environment, may indicate the need for a conscious effort to improve the quality of health protection surveillance.

A 1967 recommendation dealing with contamination control in Building X-746 has not been satisfactorily resolved and is discussed more fully under Section IV-F.

The reviewers' comments were informally discussed with Messrs. R. V. Anderson, G. H. Reynolds, and members of their staffs.

III. Recommendations

It is recommended that:

1. an independent safeguard be provided for the 300 KV X-ray machine referred to in IV-E.
2. a means be provided to prevent the pressure relief venting of contamination into occupied areas at the Oxide Conversion Facility tower glove box area (refer to IV-C).
3. the practice of leak testing sealed sources be resumed on a routine basis (refer to IV-E).
4. GAT evaluate the adequacy of the surface contamination control practices currently employed in X-746 (refer to IV-F).
5. consideration be given to the installation of a post-chlorination facility for the sewage plant effluent (refer to IV-H.1.).
6. the source of the green color and the chromate concentrations observed in the stream at Water Sampling Station II be clearly identified (refer to IV-H.4.).

IV. Findings

A. Safety Orientation

Slides showing emergency procedures for criticality accidents were seen and a tape was heard giving alarms and their meanings. In addition, there is a presentation normally given concerning day-to-day health physics problems. This training is given each new employee and occasionally to older employees as a refresher. The quality and frequency refresher training is to be especially commended as information of this type is too soon forgotten when not used routinely.

B. Restrictions

Considerable use of the mobile whole body counter was made during the past year. Two hold overs from the 1965 overexposures continue to be on restriction. During the year, there was one additional restriction between January 8 and July 17. This employee worked in the X-744 sample removal and storage area. During this period, the employee had about one MPBB of U.

C. Oxide Conversion Facility X-705

The Oxide Conversion Facility is operating at 235-U enrichments between 3% and 93%. The Operations Group has required the services of a health physics field representative full time including some duties elsewhere in X-705. There have been three incidents in the past year of health protection significance. The tower burned through twice, releasing an estimated 4-5 grams of U each time. The other incident was an inadvertent pressurization of the tower glove boxes by the nitrogen fire protection system, the amount of U released into the room being estimated at 120 mgms. No internal exposures resulted from any of these occurrences.

A doubling of the thickness of the tower construction material has been accomplished and is expected to reduce the frequency of burn through. Both health physics and operations personnel at GAT expressed the opinion that the degree of personnel hazard during one of these incidents is not sufficient to warrant the gross engineering or operational changes which might be necessary to completely eliminate burn throughs. The area near the tower is well instrumented with air samplers, so that an incident of this nature should not go undetected for very long.

The consequence of a pressurization of the tower glove boxes depends upon the contents of the boxes as well as the presence or absence of a fire. The present practice of having a pressure relief system which vents to the room is questionable, especially since better alternatives are readily available.

D. Solution Recovery and Decontamination X-705

These areas have not been a major source of difficulty from a health protection viewpoint. Solution Recovery is still being expanded, while Decontamination appears to be operating at a normal load. Housekeeping throughout X-705 was quite good considering the type of work being done as well as the need for dismantling and cleaning large cumbersome pieces of equipment.

In the course of a tour of these facilities, it was learned that routine checks on the efficiency of the ventilation systems are not being made. Following a recent appraisal of a similar ORO facility, it was found that many of these sytems are operating below capacity and that simple maintenance improved ventilation significantly. These same comments might also be appropriate for other facilities at GAT.

E. X-Ray Machine and Isotopic Sources

A cursory review of three X-ray machines and a Ra-Be neutron irradiation facility was made. A 300 KV, 10ma machine is located in a shielded room and has interlocks on the double door entrance. The only visual indication of the machines status is on the control console. Visual indicators, inside and outside of the room, actuated by a source independent of the control circuitry of the machine would appear advisable.

This degree of independence could be attainable through the use of a radiation detector or high voltage sensing device to activate the indicators.

Consideration should be given by Health Physics personnel for a detailed review of these facilities both from an engineering and an administrative or procedural safety viewpoint.

It was learned during this tour that the plant's sealed radioisotopic sources have not been leak tested for some time. The possible consequences of a leaking source are obvious and the minimal effort required to assure their integrity together warrant the reestablishment of a routine test program.

F. UF_6 Sampling and Shipping Center, X-746

This facility was visited as a follow-up on comments made in the 1967 appraisal report. Although the paper floor covering beneath the pigtail connection station has been replaced with stainless steel sheeting to facilitate clean up after sampling operations, the sheets do not appear to have been placed in the optimium location and may not be of adequate size to accomplish their purpose. The floor area directly beneath the pigtail connection is not served by the covering. The pigtail ventilation system appears to be doing an adequate job as evidenced by room air concentrations remaining within the PAL for the past five months. The in-stack concentration of 5-20 PAL does not represent a health protection problem; however, if reasonable methods are available for reducing the concentration such action is not objectionable.

Since this facility was designed for the toll enrichment program to accommodate visitors desiring to view the sampling of their material, it is important that surface contamination be well controlled. It is understood there is neither a routine schedule for contamination monitoring nor a practice of recording the results of such surveys. To aid in assuring this area will be maintained in a manner which would reasonably preclude having visitors involved in a contamination incident, it is considered appropriate that GAT evaluate the frequency of the existing surface contamination monitoring program and consider recording the results of such surveys to aid in identifying recurrent contamination sources.

G. Industrial Hygiene

1. Noise Surveys

These are made on a "complaint" basis about once per year rather than on a routine schedule. The plant areas wherein a recognized hearing loss potential exists are limited and include the south end of the air compressor building (X-330) and the shops building (X-720). The criteria currently used at GAT are:

Weighted db level	Protection Requirement
85 or lower	none
86 - 93	at employee's discretion
94 or higher	mandatory

A variety of hearing protection devices are available through the Medical Department including ear plugs and muffs. Employees are given an audiometric examination annually. The audiometer was calibrated by the manufacturer in 1966 for approximately $150.

The occupational noise exposure standard in Title 41 Part 50-204.1, Subpart B, "General Safety and Health Standards" is currently under Department of Labor review and will be applicable to AEC contractor activities. It is suggested this standard be reviewed carefully and any adjustments necessary in the GAT hearing conservation program be made to assure compliance. Although there currently are no serious occupational noise exposures at GAT, the new noise standard includes requirements not previously included in the GAT program; i.e., reports to employees - 50-204.10d.

2. Respiratory Protection

A variety of respiratory protection is available at GAT and is refurbished in Bldg. X____. The equipment includes half-masks, M-11 canister masks, Chemox and welders' masks with appropriate eye protection. The use guides for respiratory protection in multiples of the Plant Allowable Limit (PAL) are:

PAL	Type
1-5	half-mask
5-100	full face
$>$100	self-contained

GAT currently employs no respirator fitting program; however, a sufficient stock of different types is available to enable an employee to find a "comfortable" fit.

3. Urinalyses

Urine samples are collected routinely from employees at a frequency commensurate with their exposure potential. Fluorides, mercury, alpha and uranium represent the most common categories of urinalysis. GAT has never found it necessary to restrict an employee due to non-radioactive exposure. The urinalysis recall frequency currently employed is:

Category	GAT-MPC	Concentration	Recall Frequency	Considered Normal
Fluorides	4 mg/l	4 mg/l	monthly	0.4 - 1.0 mg/l
		6	weekly	
		8	immediately	
Mercury	0.3 mg/l	0.08 mg/l	monthly	none
		0.10	weekly	
		0.20	immediately	
Alpha	9d/m/100ml	5 d/m/100ml	monthly	< 5 d/m/~~100ml~~
		9	weekly	
		20	immediately	
Uranium	0.06mg/l	0.01 mg/l	monthly	< 0.01 mg/l
		0.02	weekly	
		0.06	immediately	

H. Environmental Pollution

1. Steam Plant Emissions

Sample data show the particulate emissions from the coal-fired steam plant to be in marginal non-compliance. An engineering study concluded adequate corrective

measures could probably be implemented for approximately $6,000. Appropriate sampling equipment has been ordered for approximately $2,000 to enable GAT forces to collect subsequent data more economically than contracting with the consultant firm which supplied the initial test data.

The cost to acquire and install smoke indicator devices in compliance with 42 CFR 76 has been estimated at approximately $13,000 including $7,200 for instrumentation.

2. Open Burning and Incineration

GAT has ceased open burning, implemented a sanitary landfill and in early November acquired a Cobey Pak-Tainer refuse compactor-transporter and appropriate containers. An engineering estimate of approximately $40,000 has been made for the planned replacement of the existing non-compliant incinerator for uranium-contaminated combustibles (X-705) and is currently budgeted for FY 1969.

3. Sewage Treatment

The secondary treatment facility meets the requirements of AECM 0570 ~~42 CFR 76~~; however, there is no routine post-chlorination capability. There is also no routine surveillance of the bacteria concentration in the effluent. From discussions with GAT representatives, it is understood that a provision for post-chlorination was included in the original sewage plant design and installation of the required equipment would probably represent a nominal cost. Since post-chlorination is a better method for

assuring an acceptable bacteria concentration is maintained, it is considered appropriate that the necessary facilities be installed. Subsequently, a chlorine residual determination should be added to the sewage effluent surveillance program which currently consists of:

Type	Frequency
BOD	monthly (influent & effluent)
pH	weekly (spot check-Monday)
Settleable Solids	weekly
Suspended Solids	monthly (influent & effluent)
Stability	monthly

4. Process Discharge Surveillance

Automated proportional sampling, analyses and recording stations have recently been installed on each of the three main surface streams leaving the site. The stations approximate the previous grab sample locations and, based on the 1967 data, exhibit the following characteristics:

Station No.	Avg. Flow (10^6 gpd)	Discharges to	Category	Avg.	High	Low
11(N.E.)	2.6	Little Beaver	Temp.	65-70°F	-	-
			Fluoride	0.48 mg/l	1.4	0.1
			Chromate	0.14 mg/l	0.36	0
			pH	8.15	8.6	7.1

This station samples the combined effluents from the chemical cleaning, decontamination, and laundry facilities consisting mainly of neutralized chemical wastes in addition to surface run-off.

10(W)	0.26	Salt Creek	Chromate	0.02 mg/l	0.16	0
			pH	8.0	8.6	7.6

This station samples mainly surface run-off including trace amounts of chromate-bearing cooling water from occasional condenser drainage.

3(S) 0.3 Salt Creek pH 7.1 8.0 8.9

This station samples mainly surface drainage including that from the coal pile run-off plus waste salt brine and a small amount of sulfuric acid from water softener regeneration. Each of these stations also collects a proportional composite sample which is analyzed monthly for radioactivity, the results of which are within appropriate control levels.

All surface streams and approximately 0.3 million gallons per day of cooling water containing about 20 mg/l chromate (by pipeline) discharge to the Scioto River where the flow averages 4,500 million gallons per day and the minimum flow averages 226 mgpd. The 1967 data for Sample Location 14 (approximately 20 feet downstream from the cooling water outfall) exhibit the following characteristics:

Category	Average	High	Low
Chromate	0.08 mg/l	0.3	0
pH	7.4	7.9	6.8
Fluoride	0.58 mg/l	0.6	0.4

Although the chromate concentration in the Scioto River at the outfall slightly exceeds the 1962 PHS Drinking Water Standard of 0.05 mg/l, this is not considered a

serious problem at the present discharge rate. The sample data for 1967 from Sample Location 1 located approximately three miles downstream exhibit the following characteristics:

Category	Average	High	Low
Chromate	0.01 mg/l	0.05	0
pH	7.6	8.4	6.0
Fluoride	0.35 mg/l	0.5	0

The stream sampled at Station 11 had a clear lime green color which could not be satisfactorily explained by the GAT staff during the appraisal visit. The color extended for a considerable distance and appeared to be a greenish precipitate at the confluence with Little Beaver Creek (perhaps 0.25 miles away). Although somewhat diminished, the color was distinguishable in Big Beaver Creek at Route 23 (perhaps 5-6 stream miles away). Although chromate concentrations of significance are routinely reported at this station, their origin other than a single spill could not be identified. It is felt that the source of this color and of the routine chromate concentrations should be clearly identified.

Reviewers:

H. W. Hibbitts
Health Physicist

J. F. Wing
Health Physicist

APPROVED FOR RELEASE BY:
W. M. Barnwell

GOODYEAR

Goodyear Atomic Corporation

P.O. Box 628
Piketon, Ohio 45661

A SUBSIDIARY OF THE GOODYEAR TIRE & RUBBER COMPANY
ACTING UNDER U. S. ATOMIC ENERGY COMMISSION CONTRACT AT-(33-2)-1

TELEPHONE: PIKETON, OHIO AREA CODE 614-289-2331 TWX: 614-340-0800 TELEGRAMS: WUX-PIKETON, OHIO

MAR 3 1 1969

GAT-212-69-79
Refer to: O:ERS

U. S. Atomic Energy Commission
Piketon, Ohio 45661

Attention: Mr. R. V. Anderson
Manager, Portsmouth Area

Subject: COMMENTS ON HEALTH PROTECTION APPRAISAL
GAT - NOVEMBER, 1968

Gentlemen:

The following comments are submitted in reference to the subject report, Part III, Recommendations:

A. The using department has been notified of the inspection recommendation and is investigating various sensing devices that are suitable for the purpose. Steps will be taken for compliance.

B. The system provided to afford fire protection in the oxide conversion system glove boxes consists of a nitrogen system which is designed to flood the box with nitrogen in the event of excessive temperature within the box. Nitrogen was chosen since fluorine piping exists within this box, and the use of water is not advisable. It was recognized initially, that in the event of a nitrogen system actuation, there would be release of contamination into the room. It was felt that we could cope with the hazard based upon anticipated infrequency of actuation of the nitrogen system.

We did experience a failure of the sprinkler heads which introduce nitrogen into the box; but, the failures were investigated by Metallurgy and it was found that the heads had failed due to high temperature. At the present time, we have installed higher temperature heads in the box and since their installation, we have experienced no false pressurization of the boxes.

Although pressurization of the box does release contamination, there is an immediate alarm indicating that this condition exists. The simple fact that a head has actuated causes the shutdown of the oxide conversion system and associated alarm conditions. With this type of an alarm system, we feel there is a remote possibility that anyone would be exposed in the event of a box pressurization.

Another salient fact is that the integrity of the alpha glove boxes in this area is not one hundred percent; and even if an absolute filtered release system were provided, there would still be release of some contamination through the small leaks that are known to exist in the box.

There was some consideration to providing a duct system to vent any high pressure to the outside of the building, but we feel the risk of creating a problem outside and of losing valuable material obviates this route.

The other alternative considered was to install additional absolute filters to take care of the venting. This course of action would require major redesign of the glove box ventilation system. It would include providing for a one-way, flow-type inlet filter and the installation of at least three additional hepa filter enclosures, to match the capacity of the present micro-metallic filter. We do not consider it practical to use absolute filters for inlet air filtering since normal room dirt would cause excessive plugging of the filters.

Based on the relative risk of a problem resulting from pressurizing the glove box, we feel we are justified in maintaining the status quo insofar as the manner in venting this system is concerned.

C. All sealed sources were leak tested shortly after the appraisal inspection. No leaking sources were detected. Such tests are now scheduled on a semiannual inspection frequency.

D. UF_6 Sampling and Shipping Center, X-746: The floor area covered by the stainless steel sheeting will be expanded and/or relocated to include covering the floor under the pigtail connection. Operations will perform a frequent (approximately weekly) check of the surface contamination levels in the visitors sampling area. Results of such surveys will be recorded and filed. If the contamination levels exceed 200 d/m/100 cm^2 "wipe" or 1000 d/m/100 cm^2 "fixed" alpha contamination, decontamination of the effected areas will be performed. The monthly routine audits now made by the IHHP Department will be continued and all results filed as has been the practice.

E. The sewage plant at X-site is a secondary sewage treating facility. The effluent is clear and is piped to the Scioto River where it is diluted (285,000 GPD into an average flow of 4,500,000,000 GPD).

Although the need for post chlorination is somewhat doubtful, it is being considered as an item in the FY-1972 budget. It is

estimated that approximately 25 pounds of chlorine per day will be needed, at the present flow rates, to result in an acceptable bacteria concentration in the subject effluent.

F. In order to determine the source of the green color and chromate concentrations in the stream at Water Sampling Station No. 11, water, mud and green solid material were collected and analyzed. The laboratory report follows:

Mud (approximately one cup sample)

Total Cr	6.9 mg
Total Fe	3900 mg
Total Ni	15 mg

Water

Total Cr	0.41 mg/liter
Total Cr^{+6}	0.09 mg/liter
Total Fe	0.6 mg/liter
Total Ni	less than 0.1 mg/liter

Collected along with the mud and water was a light green, slimy, mossy-like material suspected of being algae. The laboratory results and comments are listed below:

Moisture	77%
Volatile matter at 800°C.	89%
Ni	0.08%
Cr	less than 0.3 ppm
PO_4	0.02%

"If the sample had not contained mud, it is believed that practically all of the sample would have volatilized at 800°C. Since the high moisture content indicated organic material and the sample looked like algae, a qualitative test was made for chlorophyll. This test was positive, which confirms the presence of organic material."

Further investigation revealed that chromated cooling water used for emergency diesels was being unknowingly discharged to the creek.

Very truly yours,

GOODYEAR ATOMIC CORPORATION

G. H. Reynolds
General Manager

BK:pjb

cc: G. H. Reynolds / B.I.C. Hall
L. E. Fuller
H. B. Lehman, M.D.
Ben Kalmon

UNITED STATES
ATOMIC ENERGY COMMISSION
PORTSMOUTH AREA OFFICE
PIKETON, OHIO 45661

M:ERS

MAR 6 1969

Goodyear Atomic Corporation
Piketon, Ohio 45661

Attention: Mr. G. H. Reynolds, General Manager

Subject: ANNUAL HEALTH PROTECTION APPRAISAL

Gentlemen:

We are forwarding herewith five copies of the formal report of the appraisal conducted on November 19-22, 1968.

We are pleased that the report reflects continued safe operation by Goodyear of the diffusion plant, and the appraisers have requested that we extend their appreciation of the cooperation extended by Goodyear during the appraisal.

Your attention is called to the recommendations in the report. We would appreciate receiving your comments with regard to those recommendations and, if you agree with those recommendations, please proceed with their implementation. If sound reasons exist why the recommendations are not warranted, in whole or in part, we would appreciate your comments.

Very truly yours,

R. V. Anderson

R. V. Anderson
Manager, Portsmouth Area

Enclosure:
Appraisal Report (5 cys)

HEALTH PROTECTION APPRAISAL
GOODYEAR ATOMIC CORPORATION

November 1968

I. Purpose and Scope

The annual health protection appraisal of the Goodyear Atomic Corporation at the Portsmouth Gaseous Diffusion Plant was conducted November 19-22, 1968, by Messrs. H. W. Hibbitts and J. F. Wing, Health and Nuclear Safety Branch, Safety Division, ORO. A review in the areas of industrial hygiene, health physics, and environmental pollution was made including visits to several of the relevant support facilities and effluent disposal areas. Nuclear criticality safety review, normally coincident with the regular GAT annual appraisal, was deferred due to ORO staff commitments and will be rescheduled in early 1969.

II. Summary

Within the scope of this review, the plant has continued to be operated in a safe manner. The recommendations resulting from this appraisal, although not implying an unsafe working environment, may indicate the need for a conscious effort to improve the quality of health protection surveillance.

A 1967 recommendation dealing with contamination control in Building X-746 has not been satisfactorily resolved and is discussed more fully under Section IV-F.

The reviewers' comments were informally discussed with Messrs. R. V. Anderson, G. H. Reynolds, and members of their staffs.

III. Recommendations

It is recommended that:

A. an independent safeguard be provided for the 300 KV X-ray machine referred to in IV-E,

B. a means be provided to prevent the pressure relief venting of contamination into occupied areas at the Oxide Conversion Facility tower glove box area (refer to IV-C),

C. the practice of leak testing sealed sources be resumed on a routine basis (refer to IV-E),

D. GAT evaluate the adequacy of the surface contamination control practices currently employed in X-746 (refer to IV-F),

E. consideration be given to the installation of a post-chlorination facility for the sewage plant effluent (refer to IV-H.1.), and

F. the source of the green color and the chromate concentrations observed in the stream at Water Sampling Station 11 be clearly identified (refer to IV-H.4.).

IV. Findings

A. Safety Orientation

Slides showing emergency procedures for criticality accidents were seen and a tape was heard giving alarms and their meanings. In addition, there is a presentation normally given concerning day-to-day health physics problems. This training is given each new employee and occasionally to older employees as a refresher. The quality and frequency of refresher training is to be especially commended as information of this type is too soon forgotten when not used routinely.

B. Restrictions

Considerable use of the mobile whole body counter was made during the past year. Two hold overs from the 1965 overexposures continue to be on restriction. During the year, there was one additional restriction between January 8 and July 17. This employee worked in the X-744 sample removal and storage area. During this period, the employee had about one MPBB of U.

C. Oxide Conversion Facility X-705

The Oxide Conversion Facility is operating at 235-U enrichments between 3% and 93%. The Operations Group has required the services of a health physics field representative full time including some duties elsewhere in X-705. There have

been three incidents in the past year of health protection significance. The tower burned through twice, releasing an estimated 4-5 grams of U each time. The other incident was an inadvertent pressurization of the tower glove boxes by the nitrogen fire protection system, the amount of U released into the room being estimated at 120 mgms. No internal exposures resulted from any of these occurrences.

A doubling of the thickness of the tower construction material has been accomplished and is expected to reduce the frequency of burn through. Both health physics and GAT operations personnel expressed the opinion that the degree of personnel hazard during one of the incidents is not sufficient to warrant the gross engineering or operational changes which might be necessary to completely eliminate burn throughs. The area near the tower is well instrumented with air samplers, so that an incident of this nature should not go undetected for very long.

The consequence of a pressurization of the tower glove boxes depends upon the contents of the boxes as well as the presence or absence of a fire. The present practice of having a pressure relief system which vents to the room is questionable, even though micrometallic filters are used, especially since better alternatives are readily available.

D. Solution Recovery and Decontamination X-705

These areas have not been a major source of difficulty from a health protection viewpoint. Solution Recovery is still being expanded, while Decontamination appears to be operating at a normal load. Housekeeping throughout X-705 was quite good considering the type of work being done as well as the need for dismantling and cleaning large cumbersome pieces of equipment.

In the course of a tour of these facilities, it was learned that routine checks on the efficiency of the ventilation systems are not being made. Following a recent appraisal of a similar ORO facility, it was found that many of these systems are operating below capacity and that simple maintenance improved ventilation significantly. These same comments might also be appropriate for other facilities at Portsmouth.

E. X-Ray Machine and Isotopic Sources

A cursory review of three X-ray machines and a Ra-Be neutron irradiation facility was made. A 300 KV, 10ma machine is located in a shielded room and has interlocks on the double door entrance. The only visual indication of the machine's status is on the control console. Visual indicators, inside and outside of the room, actuated by a source independent of the control circuitry of the machine would appear advisable.

This degree of independence could be attainable through the use of a radiation detector or high voltage sensing device to activate the indicators.

Consideration should be given by Health Physics personnel for a detailed review of these facilities both from an engineering and an administrative or procedural safety viewpoint.

It was learned during this tour that the plant's sealed radioisotopic sources have not been leak tested for some time. The possible consequences of a leaking source are obvious and the minimal effort required to assure their integrity together warrant the reestablishment of a routine test program.

F. UF_6 Sampling and Shipping Center, X-746

This facility was visited as a follow-up on comments made in the 1967 appraisal report. Although the paper floor covering beneath the pigtail connection station has been replaced with stainless steel sheeting to facilitate cleanup after sampling operations, the sheets do not appear to have been placed in the optimium location and may not be of adequate size to accomplish their purpose. The floor area directly beneath the pigtail connection is not served by the covering. The pigtail ventilation system appears to be doing an adequate job as evidenced by room air concentrations remaining within the PAL for the past five months. The instack concentration of 5-20 PAL does not represent a health protection problem; however, if reasonable methods are available for reducing the concentration such action is not objectionable.

Since this facility was designed for the toll enrichment program to accommodate visitors desiring to view the sampling of their material, it is important that surface contamination be well controlled. It is understood the operations group has neither a routine schedule for contamination monitoring nor a practice of recording the results of such surveys. To aid in assuring this area will be maintained in a manner which would reasonably preclude having visitors involved in a contamination incident, it is considered appropriate that GAT evaluate the frequency of the existing surface contamination monitoring program and consider recording the results of such surveys to aid in identifying recurrent contamination sources.

G. Industrial Hygiene

1. Noise Surveys

These are made on a "complaint" basis about once per year rather than on a routine schedule. The plant areas wherein a recognized hearing loss potential exists are limited and include the south end of the air compressor building (X-330) and the shops building (X-720). The criteria currently used by GAT are:

Weighted db level	Protection Requirement
85 or lower	none
86 - 93	at employee's discretion
94 or higher	mandatory

A variety of hearing protection devices are available through the Medical Department including ear plugs and muffs. Employees are given an audiometric examination annually. The audiometer was calibrated by the manufacturer in 1966 for approximately $150.

The occupational noise exposure standard in Title 41 Part 50-204.1, Subpart B, "General Safety and Health Standards" is currently under Department of Labor review and will be applicable to AEC contractor activities. It is suggested this standard be reviewed carefully and any adjustments necessary in the GAT hearing conservation program be made to assure compliance. Although there

currently are no serious occupational noise exposures at Portsmouth, the new noise standard includes requirements not previously included in the GAT program; i.e., reports to employees - 50-204.10d.

2. Respiratory Protection

A variety of respiratory protection is available at GAT and is refurbished in Bldg. X-705. The equipment includes half-masks, M-11 canister masks, Chemox and welders' masks with appropriate eye protection. The use guides for respiratory protection in multiples of the Plant Allowable Limit (PAL) are:

PAL	Type
1-5	half-mask
5-100	full mask
≥100	self-contained

GAT currently employs no respirator fitting program; however, a sufficient stock of different types is available to enable an employee to find a "comfortable" fit.

3. Urinalyses

Urine samples are collected routinely from employees at a frequency commensurate with their exposure potential. Fluorides, mercury, alpha and uranium represent the most common categories of urinalysis. GAT has never found it necessary to restrict an employee due to non-radioactive exposure. The urinalysis recall frequency currently employed is:

Category	GAT-MPC	Concentration	Recall Frequency	Considered Normal
Fluorides	4 mg/l	4 mg/l	monthly	0.4 - 1.0 mg/l
		6	weekly	
		8	immediately	
Mercury	0.3 mg/l	0.08 mg/l	monthly	none
		0.10	weekly	
		0.20	immediately	
Alpha	9 d/m/100 ml	5 d/m/100 ml	monthly	≪5 d/m/100 ml
		9	weekly	
		20	immediately	
Uranium	0.06 mg/l	0.01 mg/l	monthly	≪0.01 mg/l
		0.02	weekly	
		0.06	immediately	

H. Environmental Pollution

1. Steam Plant Emissions

Sample data show the particulate emissions from the coal-fired steam plant to be in marginal non-compliance. An engineering study concluded adequate corrective measures could probably be implemented for approximately $6,000. Appropriate sampling equipment has been ordered for approximately $2,000 to enable GAT forces to collect subsequent data more economically than contracting with the consultant firm which supplied the initial test data.

The cost to acquire and install smoke indicator devices in compliance with 42 CFR 76 has been estimated at approximately $13,000 including $7,200 for instrumentation.

2. Open Burning and Incineration

GAT has ceased open burning, implemented a sanitary landfill and in early November acquired a Cobey Pak-Tainer refuse compactor-transporter and appropriate containers. An engineering estimate of approximately $40,000 has been made for the planned replacement of the existing non-compliant incinerator for uranium-contaminated combustibles (X-705) and is currently budgeted for FY 1969.

3. Sewage Treatment

The secondary treatment facility meets the requirements of AECM-0510; however, there is no routine post-chlorination capability. There is also no routine surveillance of the bacteria concentration in the effluent. From discussions with GAT representatives, it is understood that a provision for post-chlorination was included in the original sewage plant design and installation of the required equipment would probably represent a nominal cost. Since post-chlorination is a better method for assuring an acceptable bacteria concentration is maintained, it is considered appropriate that the necessary facilities be installed. Subsequently, a chlorine residual determination should be added to the sewage effluent surveillance program which currently consists of:

Type	Frequency
BOD	monthly (influent & effluent)
pH	weekly (spot check-Monday)
Settleable Solids	weekly
Suspended Solids	monthly (influent & effluent)
Stability	monthly

4. Process Discharge Surveillance

Automated sampling, analyses and recording stations have recently been installed on each of the three main surface streams leaving the site. The stations approximate the

previous grab sample locations and, based on the 1967 data, exhibit the following characteristics:

Station No.	Avg. Flow (106 gpd)	Discharges To	Category	Avg.	High	Low
11(N.E.)	2.6	Little Beaver	Temp.	65-70°F	-	-
			Fluoride	0.48 mg/l	1.4	0.1
			Chromate	0.14 mg/l	0.36	0
			pH	8.15	8.6	7.1

This station proportionally samples the combined effluents from the chemical cleaning, decontamination, and laundry facilities consisting mainly of neutralized chemical wastes in addition to surface run-off.

10(W)	0.26	Salt Creek	Chromate	0.02 mg/l	0.16	0
			pH	8.0	8.6	7.6

This station proportionally samples mainly surface run-off including trace amounts of chromate-bearing cooling water from occasional condenser drainage.

3(S)	0.3	Salt Creek	pH	7.1	8.0	3.9

This station samples mainly surface drainage including that from the coal pile run-off plus waste salt brine and a small amount of sulfuric acid from water softener regeneration. Stations 10 and 11 also collect a proportional composite sample which is analyzed monthly for radioactivity, the results of which are within appropriate control levels. Station 3 automatically collects a fixed volume sample.

All surface streams and approximately 0.3 million gallons per day of cooling water containing about 20 mg/l chromate (by pipeline) discharge to the Scioto River where the flow averages 4,500 million gallons per day and the minimum flow

GOODYEAR

Goodyear Atomic Corporation
P.O. Box 628
Piketon, Ohio 45661

A SUBSIDIARY OF THE GOODYEAR TIRE & RUBBER COMPANY
ACTING UNDER U. S. ATOMIC ENERGY COMMISSION CONTRACT AT-(33-2)-1

TELEPHONE: PIKETON, OHIO AREA CODE 614-289-5511 TWX: 614-340-0800 TELEGRAMS: WUX-PIKETON, OHIO

JUL [illegible]

GAT-533-69-124

U. S. Atomic Energy Commission
Piketon, Ohio 45661

Attention: Mr. R. V. Anderson
Manager, Portsmouth Area

Subject: HEALTH PROTECTION APPRAISAL,
GOODYEAR ATOMIC CORPORATION, APRIL 1969

Gentlemen:

Mr. W. A. Pryor's report on the "Health Protection Appraisal at Goodyear Atomic Corporation, April 1969" has been carefully studied. The following comments are made with reference to the recommendations included in the appraisal:

"A. The non-geometrically safe entrainment separator of the X-705 pre-evaporator, which is packed with Pyrex glass raschig rings, be considered for replacement by a geometrically safe unit."

Plant Engineering is now making a cost estimate to replace the non-geometrically safe entrainment separator with a geometrically safe unit. A project to install a geometrically safe unit will be requested when the cost estimate is received.

"B. The studies involving the use of the 8" and 12" diameter UF_6 cylinders at higher U-235 enrichments also include the evaluations required under the criteria of AECM-0529."

Most of the necessary computer calculations have been completed, both for nickel and the proposed monel cylinders, in ORGDP packages. The report based on these calculations will be prepared shortly. Application for AEC approval will follow, and after that application for DoT approval. It would appear that no physical tests will be necessary, since these have already been performed by ORGDP, with UF_6 of lower enrichments.

"C. The 5" diameter aluminum cylinders for plant storage of UF_6 be destructively tested after the cylinders have been through several fill cycles."

After 25 fill cycles the aluminum cylinders will be hydrostatically tested at 400 psig. One cylinder will be hydrostatically tested to destruction and the pressure measured at rupture. Drop tests may be performed, depending upon the results of the hydrostatic testing.

Very truly yours,

GOODYEAR ATOMIC CORPORATION

Original Signed By
G. H. REYNOLDS

G. H. Reynolds
General Manager

JLF:dr

bc: G. H. Reynolds
C. D. Tabor
W. B. Thompson
F. E. Woltz

CDT-Goo 7/22
LE7
R. mK
C L J

UNITED STATES
ATOMIC ENERGY COMMISSION
PORTSMOUTH AREA OFFICE
PIKETON, OHIO 45661

JUN 26 1969

Goodyear Atomic Corporation
Piketon, Ohio

Attention: Mr. G. H. Reynolds, General Manager

Subject: ANNUAL HEALTH AND NUCLEAR SAFETY APPRAISAL - NUCLEAR AND TRANSPORTATION SAFETY OF GAT - 1969

Gentlemen:

We are forwarding herewith five copies of the formal report of the subject appraisal conducted April 9-10, 1969.

We are pleased that the report reflects the continuity of satisfactory control programs for nuclear safety and radioactive materials transportation, and the appraisers have requested that we extend their appreciation of the cooperation extended by Goodyear during the appraisal.

Your attention is called to the recommendations in the report. We would appreciate receiving your comments by July 22, 1969, with regard to those recommendations and if you agree please proceed with their implementation. If sound reasons exist why the recommendations are not warranted, in whole or in part, we would appreciate being advised.

Very truly yours,

ORIGINAL SIGNED BY
E. R. SULLIVAN, JR.

R. V. Anderson
Manager, Portsmouth Area

Enclosure:
Appraisal Report (5 cys)

6/20 C.DT ←
RMR
LEF
Comments !
GDS 6/10/69

HEALTH PROTECTION APPRAISAL
GOODYEAR ATOMIC CORPORATION
APRIL 1969

Comments given to Kay Sullivan Verbally 6/13/69

Recommendations
ABC - OK

I. Purpose and Scope

The nuclear safety portion of the annual health protection appraisal of Goodyear Atomic Corporation, at the Portsmouth Gaseous Diffusion Plant, was conducted April 9-10, 1969, by W. A. Pryor, Health and Nuclear Safety Branch, Safety Division, ORO. The remaining aspects of the health protection appraisal were completed in November 1968. The review comprised the areas of nuclear safety and transportation safety and included tours of appropriate areas.

II. Summary

The findings of this appraisal indicate the continuity of satisfactory control programs for nuclear safety and radioactive materials transportation. Management interest and support have been maintained at a high level. The knowledge and concern for nuclear safety by the operating groups are quite evident, while housekeeping in each operating area visited was particularly noteworthy in spite of the maintenance which was in progress in many locations.

There were no recommendations concerned with nuclear safety during the 1967 health protection appraisal.

The highlights of the review were informally discussed with Messrs. R. V. Anderson and G. H. Reynolds and members of their respective staffs.

III. Recommendations

It is recommended that:

A. The non-geometrically safe entrainment separator of the X-705 pre-evaporator, which is packed with Pyrex glass raschig rings, be considered for replacement by a geometrically safe unit.

B. The studies involving the use of the 8" and 12" diameter UF_6 cylinders at higher U-235 enrichments also include the evaluations required under the criteria of AECM-0529.

C. The 5" diameter aluminum cylinders for plant storage of UF_6 be destructively tested after the cylinders have been through several fill cycles.

IV. Findings

A. Nuclear Safety

1. Plant Changes

Plant areas having changes with significant nuclear safety implications since the last appraisal or currently scheduled include X-705, the cascade and the sampling facilities.

In X-705, the new continuous dissolver has been installed in the 'B' Recovery Area but due to valve difficulties is not in operation. The 30" diameter UF_6 cylinders are being internally decontaminated with a borated solution, while an improved small cylinder decontamination unit will be installed. Similarly, planning is also underway for the decontamination of 10- and 14-ton cylinders. An ultrasonic unit in the small parts cleaning area will minimize the need for hand decontamination. The conditioning stand will be removed and reinstalled in another location in ~~order~~ to provide more space for dismantling and storing converters

and compressors. A new incinerator for disposal of contaminated, burnable scrap, which will have a safe ash collection system and an improved system for reducing air pollution, is also scheduled.

Cascade and cascade auxiliary changes include the installation of an automatic spectrometer for the extended range product station. Improved control over the simultaneous withdrawal at two different U-235 enrichments will be achieved. In addition, the installation of a computer in the Central Control Room for computing and readout of U-235 enrichments at all withdrawal points will minimize problems of enrichment mixing in withdrawal cylinders due to misvalving inventory shifts, etc. A new sampling facility for 10- and 14-ton cylinders is nearing completion.

2. X-705 Operations

Operation of the X-705 Oxide Conversion Facility has greatly reduced the out-of-cascade inventory of uranium. The SS accountability warehouses show significantly the effects of this inventory reduction.

Periodically, the Pyrex glass raschig rings in the packed entrainment separator of the pre-evaporator in the 'B' Recovery Area must be replaced. Since this entrainment separator is not of geometrically safe design, nuclear safety is dependent upon the presence of these raschig rings. In this particular evaporator, the free fluorides are concentrated by the evaporation process and completely etch the glass raschig rings. (See Recommendation "A").

3. Nuclear Safety Studies

Studies are underway by Nuclear Engineering to determine upper U-235 enrichment limits under controlled moderation for the 8" and 12" diameter UF_6 cylinders. Determinations for safe separations in plain arrays have been made using KENO calculations. However, further study will be required if shipments at the higher enrichments are made, since assignment of the transport index to shipping containers is based upon cubic arrays as required in AECM-0529. (See Recommendation "A"). In addition, a small number of 5" diameter aluminum cylinders have been procured for in-plant storage of UF_6. While the current use of these cylinders is primarily of a test nature, much useful information could be obtained from the destructive testing after the cylinders have been through several fill and evacuation cycles. The test criteria of AECM-0529 would provide the basis for extended usage. (See Recommendation "C").

Development is also continuing on the Neutron Probe for non-destructive, quantitative determinations of uranium content. Use of the instrument includes the locating of cascade deposits, automatic filling of cylinders at withdrawal stations and monitoring uranium content of shipping containers. Other projects include a new safe vacuum cleaner and the revision of the Portsmouth nuclear safety guide (GAT-225, Rev. 1).

B. Transportation

The transportation of radioactive and fissile materials both in and out of the Portsmouth Plant continues to be within the requirements of AECM-0529.and the regulations of the Department of Transportation. There have been occasions where shipments of UF_6 were delayed by the lack of outer protective structural packages. However, the delays have been of a temporary nature only.

C. Committee for Special Criticality Review

A committee for Special Criticality Review was organized in 1968 to review the entire Portsmouth Plant for potential criticality problems. This is essentially a continuation of a similar committee organized in 1967. Its membership consists of representatives of the Production Plant Engineering and Maintenance and Technical Divisions. Meetings are called by Nuclear Engineering and are on a non-scheduled basis. The committee has made significant recommendations for improving nuclear safety control.

Reviewer:_____

W. A. Pryor
Nuclear Safety Specialist

Dr Woltz - Mr Brown gave Mr Sullivan his verbal comments on this draft 6/13/69. We are holding letter prepared by D-532 in case we get another request for comments.

Judy - 6/19

A-925 (3-58) REV. ROUTE AND MESSAGE SLIP

TO	DEPT.	BLDG.
G. H. Reynolds		X-100
~~Joe~~		
Mr. Thompson		
6/13		

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OF PHONE NO.

☐ TELEPHONED ☐ PLEASE PHONE HIM

☐ CALLED TO SEE YOU ☐ RETURNED YOUR CALL

☐ WANTS TO SEE YOU ☐ RUSH

REMARKS: Would appreciate your review for facts.

FROM		DATE
E. R. Sullivan, Jr.		6-10-69
DEPT. AEC	BLDG. X-100	PHONE NO. Extension 2122

6/20

C.D.T to ans
RMR
LEF
Comments!
6/10/69

Please prepare answer by 6-20-69

W B Thompson
Please handle!

HEALTH PROTECTION APPRAISAL
GOODYEAR ATOMIC CORPORATION
APRIL 1969

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Reviewer: _____

W. A. Pryor
Nuclear Safety Specialist

GOODYEAR

Goodyear Atomic Corporation
P.O. Box 628
Piketon, Ohio 45661

A SUBSIDIARY OF THE GOODYEAR TIRE & RUBBER COMPANY
ACTING UNDER U. S. ATOMIC ENERGY COMMISSION CONTRACT AT-(33-2)-1

TELEPHONE: PIKETON, OHIO AREA CODE 614-289-2331 TWX: 614-340-0800 TELEGRAMS: WUX-PIKETON, OHIO

AUG 11 1969 GAT-212-69-177

U. S. Atomic Energy Commission
Piketon, Ohio 45661

Attention: Mr. R. V. Anderson
Manager, Portsmouth Area

Subject: ANNUAL HEALTH PROTECTION APPRAISAL - 1968

Gentlemen:

In reference to your letter on the above subject, dated July 28, 1969, reference is made to a memorandum from the ORO Safety Division, dated July 23, 1969. This memorandum requests specific information.

In reference to the three questions pertaining to Monitoring Station No. 11, the following answers are forwarded:

1. Is 1800 gpm or 2.6 million gpd a representative figure for stream flow?

   This value of 1800 gpm was obtained from data available prior to the installation of the flow meter recorder and flow integrator. At the time the 1800 gpm was used, the figure was representative. There was more plant activity at the time. The current flow rate based on the flow integrator over the past twelve months averages 631 gpm (0.91 million gpd).

2. What is the source of excess above the 36,000 gpd from the chemical cleaning, decontamination, and laundry facilities?

   The excess water can be from any of the following sources: (In many instances any part of these discharges are via Monitoring Station No. 11.)

   Utilities Equipment:

   1. Cooling water for Norwalk compressors.
   2. Air plant intercoolers.
   3. Air plant diesels (used intermittently).

Cascade Equipment:

1. Seal exhaust pumps.
2. Freon vapor condensors (used intermittently).
3. ACR Air Conditioning cooling water.
4. Datum pumps.

Miscellaneous:

Surface waters.

The surface waters are probably the most significant water source. It is noted that a moderate rain will cause the flow-meter to read full scale of 1200 gpm within a short time.

3. What are the monthly high, low, and average stream flows and chromate concentrations as determined at Monitoring Station No. 11 from June, 1968, through June, 1969, inclusive?

Recording data for the stream flow was started in August, 1968, and for hexavalent chromates in September, 1968. Considerable operating difficulties have been experienced with both the strip chart recorder and sensing element for the chromates. The flow data is tabulated below:

Month	High Flow	Low Flow	Average Flow from Integrator Data
August, 1968	≥1200 gpm	460 gpm	570 gpm
September, 1968	≥1200 gpm	470 gpm	525 gpm
October, 1968	≥1200 gpm	550 gpm	665 gpm
November, 1968	≥1200 gpm	560 gpm	725 gpm
December, 1968	≥1200 gpm	450 gpm	600 gpm
January, 1969	≥1200 gpm	500 gpm	700 gpm
February, 1969	≥1200 gpm	460 gpm	650 gpm
March, 1969	≥1200 gpm	700 gpm	765 gpm
April, 1969	≥1200 gpm	460 gpm	755 gpm
May, 1969	≥1200 gpm	400 gpm	550 gpm
June, 1969	≥1200 gpm	380 gpm	460 gpm
July, 1969	≥1200 gpm	490 gpm	610 gpm

Average - 631 gpm

Hexavalent Chromates:

Month	High Concentration	Low Concentration	Composite Average
September, 1968	≥ 0.50 ppm	0 ppm	0.13 ppm
October, 1968	≥ 0.50 ppm	0.03 ppm	0.18 ppm
November, 1968	≥ 0.50 ppm	0.04 ppm	0.01 ppm
December, 1968	≥ 0.50 ppm	0 ppm	0.18 ppm

Hexavalent Chromates: - contd

Month	High Concentration	Low Concentration	Composite Average
January, 1969	> 0.50 ppm	0 ppm	0.10 ppm
February, 1969	> 0.50 ppm	0 ppm	0.16 ppm
March, 1969	> 0.50 ppm	0 ppm	0.15 ppm
April, 1969	> 0.50 ppm	0 ppm	0.16 ppm
May, 1969	> 0.50 ppm	0.24 ppm	<0.01 ppm
June, 1969	0.28 ppm	0.03 ppm	<0.01 ppm
July, 1969	0.24 ppm	0.02 ppm	-

The anomalous reading for November, 1968, where the composite average is less than the lowest value can only be explained in instrument malfunction or displaced zero. The full range of the instrument is 0.50 ppm. The May and June, 1969, values cannot be considered reliable as the plant was on strike and the print wheel on the recorder was in need of repairs. The print wheel was not repaired until mid-June as a result of the strike.

Further investigation of the green color, observed at the time of the inspection in the surface stream, has not revealed the exact source of the pollution. Samples of mud and water taken initially showed quantities of chromium, iron, nickel, and organic material. The presence of these metals could possibly indicate some type of a cleaning solution as the pollutant. The organic material has been traced mostly to the presence of algae. All areas containing cleaning-type solutions were again investigated with still no evidence found of any leakage. We can, therefore, only assume that a "slug" of cleaning solution did appear for a short length of time. Based on the chemical analyses, it appears that the hexavalent chromium was reduced and precipitated out in the trivalent form.

It is stated in the memorandum that it is presumed that this green color still remains. This color cleared up in the stream within a few days after the inspection and has not been observed since.

Very truly yours,

GOODYEAR ATOMIC CORPORATION

Original Signed By
G. H. REYNOLDS

G. H. Reynolds
General Manager

BK:hg

cc: G. H. Reynolds
L. E. Fuller
H. B. Lehman, M.D.
B. Kalmon

8/11 LE7

UNITED STATES
ATOMIC ENERGY COMMISSION
PORTSMOUTH AREA OFFICE
PIKETON, OHIO 45661

JUL 28 1969

Goodyear Atomic Corporation
Piketon, Ohio 45661

Attention: Mr. G. H. Reynolds, General Manager

Subject: ANNUAL HEALTH PROTECTION APPRAISAL - 1968

Gentlemen:

Reference is made to the report "Health Protection Appraisal - Goodyear Atomic Corporation, November 1968", and to your letter of March 31, 1969, "Comments on Health Protection Appraisal GAT - November, 1968", GAT-212-69-79.

We are forwarding herewith for your further consideration a copy of a memorandum, together with the enclosures, from the ORO Safety Division, dated July 23, 1969, subject "Annual Health and Nuclear Safety Appraisal of GAT, 1968". It is noted that the Safety Division feels that the comments as contained in your letter of March 31, 1969, resolves all of the recommendations except one. We would therefore appreciate your reviewing again the item concerning the coloration of the water in Little and Big Beaver, and furnishing answers to the questions raised in the Safety Division's memorandum. Please also furnish answers to the additional questions regarding the stream served by Monitoring Station No. 11.

Very truly yours,

Original Signed By
R. V. ANDERSON
Area Manager

R. V. Anderson
Manager, Portsmouth Area

Enclosure:
Cy JAL memo dtd 7/23/69, w/attach.

M:ERS

PIKETON, OHIO
PORTSMOUTH AREA
30 JUL 69 12 53

UNITED STATES
ATOMIC ENERGY COMMISSION
OAK RIDGE OPERATIONS
P.O. BOX E
OAK RIDGE, TENNESSEE 37830

AREA CODE 615
TELEPHONE 483-8611

JUL 2 3 1969

R. V. Anderson, Area Manager
Portsmouth Area Office

ANNUAL HEALTH AND NUCLEAR SAFETY APPRAISAL OF GAT, 1968

Reference is made to your memorandum of May 6, 1969, subject as above, and the GAT response attached thereto.

The additional information relative to the nitrogen fire protection system provided for the glove boxes in the oxide conversion facility was helpful, and in light of this clarification it is no longer felt that glove box vent modifications are necessary.

The GAT response stated on Page 2: "Although the need for post chlorination is somewhat doubtful, it is being considered as an item in the FY 1972 budget." The attached "Water Quality Standards for the Scioto River Basin" clearly show that:

1. "All effluents will be satisfactorily disinfected, prior to discharge to meet the criteria for downstream water uses and the facilities to provide such disinfection will be installed without delay, and in no instance later than the dates specified in the approved schedules."

2. The schedule for the Scioto Basin at the sewage plant effluent point indicates: "All uses by not later than January 1, 1972."

Therefore, with respect to the Ohio Water Quality criteria, disinfection of the sewage plant effluent is required by January 1, 1972. The GAT statement regarding the consideration of including an item in the FY 1972 budget for post chlorination is timely; however, the implementation schedule should recognize the January 1 goal.

The GAT response on page 3 stated: "Further investigation revealed that chromated cooling water used for emergency diesels was being unknowingly discharged to the creek." It was unclear whether or not consideration had been given to routing this chromate source into the RCW disposal system or to using a non-chromated cooling water for the diesels. Subsequent discussion with your office indicated the emergency diesel source had

been readjusted from approximately 25 gallons per minute (gpm) to the normal 4 gpm. In addition, the chromated discharge (approximately 20 gpm) from the X-333 Chromate Recovery Test facility has ceased. It would be expected that curtailment of these chromate additions would produce a detectable decrease at the monitoring station if the diesel and chromate recovery discharges were the significant contributors.

Regarding the stream served by Monitoring Station No. 11, there remains these questions:

1. Is 1,800 gpm or 2.6 million gpd a representative figure for the stream flow?

2. What is the source of the excess above the 36,000 gpd from the chemical cleaning, decontamination, and laundry facilities?

3. What are the monthly high, low, and average stream flows and chromate concentrations as determined at Monitoring Station No. 11 from June 1968 through June 1969, inclusive?

The GAT response regarding the source of the green color in this surface stream is not at all clear. It seems to intimate the color was due to the presence of algae as verified by a positive result from a chlorophyll test, thereby confirming the presence of organic material. The response does not clearly identify the green color. Near the sample station the stream, when viewed during the appraisal, was sufficiently transparent to allow a clear view to the stream bottom through approximately two feet of what appeared to be green water. Algae would be turbid and the presence of free chlorophyll is extremely unlikely. The presence of an organic material in a surface ditch, considering the potential sources, is neither surprising nor revealing as to the identification of the green color.

Since this color was present in Little and Big Beaver in areas accessible to the public at the time of the last Health Protection Appraisal and presumably remains so, it is considered prudent to know conclusively the cause of this color. It is our opinion that this question remains unresolved.

Original Signed by
J. A. Lenhard

Joseph A. Lenhard, Director
Safety Division
Oak Ridge Operations

OSH:JFW

Enclosure:
Scioto Basin Water Quality Criteria

cc w/o encl:
R. C. Armstrong, AMO, OR
C. A. Keller, PROD, OR
E. F. Newman, ENG, OR

WATER POLLUTION CONTROL BOARD
DEPARTMENT OF HEALTH
COLUMBUS, OHIO

WATER QUALITY STANDARDS ADOPTED BY THE BOARD APRIL 9, 1968,
FOR THE WATERS OF THE SCIOTO RIVER BASIN

The Ohio Water Pollution Control Board hereby adopts water quality standards for the intrastate waters of the Scioto River Basin.

The Amended Stream-Water Quality for Various Uses and the Minimum Conditions Applicable to All Waters adopted by the Board on October 10, 1967, shall apply to all waters under consideration herein in accordance with the following schedules.

1. The Scioto River from the Jackson Pike sewage treatment plant to the confluence of Salt Creek below Chillicothe -

   (a) Aquatic Life B, Industrial Water Supply, and Agricultural and Stock Watering uses by June 1, 1968.

   (b) All uses by not later than January 1, 1975.

2. Paint Creek from the Washington Court House sewage treatment plant to the confluence of Rattlesnake Creek below Greenfield -

   (a) Aquatic Life B and Agricultural and Stock Watering uses by not later than January 1, 1970.

   (b) All uses by not later than January 1, 1972.

3. All other waters in the basin -

   (a) All uses by not later than January 1, 1972.

Implementation and Enforcement Plan

In accordance with the authority under Chapter 6111, Ohio Revised Code, the Board hereby proposes the following program for the prevention, control, and abatement of new and existing pollution of the waters of the state considered herein:

(1) All sewage and organic industrial wastes will be given not less than secondary treatment (biochemical oxidation) and the facilities to provide such treatment will be constructed and placed in operation without delay, and in no instance later than the dates specified in the approved schedules;

(2) Where necessary to meet the stream-water quality criteria, additional or supplementary treatment of wastewaters will be provided to the fullest extent consistent with current research and technological advances:

(3) All effluents will be satisfactorily disinfected, prior to discharge, to meet the criteria for downstream water uses and the facilities to provide such disinfection will be installed without delay, and in no instance later than the dates specified in the approved schedules;

(4) All other pollution constituents will be adequately treated and/or controlled to meet the water quality conditions and criteria, and the facilities to provide such treatment will be constructed and placed in operation without delay, and in no instance later than the dates specified in the approved schedules;

(5) Local programs will be initiated to control and reduce pollution resulting from (a) bypassing, (b) spillages, and (c) discharges resulting from construction or breakdowns;

(6) Necessary studies will be made and, where feasible, plans and construction programs will be developed as rapidly as possible for reducing pollution from existing combined sewer overflows and inadequate sewage collection systems;

(7) Where necessary to improve water quality and to reduce algal growths, supplementary treatment of wastewaters will be provided to the fullest extent consistent with current research and technological advances:

(8) A comprehensive program for further improvement of the water quality of the Scioto River below Columbus by such means as augmenting the low flow in the river at Columbus by at least 150 c.f.s.; by augmenting the flow in the river downstream from Columbus at critical points with ground water, pumped storage reservoirs and/or reservoirs on tributary streams; by aeration of the water in the river below Columbus; or a combination of these and/or other appropriate means, is hereby made a part of this plan. The Board recognizes that the implementation of such a comprehensive program will be necessary to fully meet the water quality conditions and criteria; and

(9) The stream-water quality monitoring program will be expanded to adequately provide assurances of compliance with these standards.

Furthermore, the Board and the Ohio Department of Health will encourage and assist other agencies such as the Ohio Water Commission and the Soil Conservation Service, U. S. Department of Agriculture, in the implementation of effective soil erosion control programs, and programs for the reduction of the run-off of phosphorous, nitrogen compounds, and pesticides.

Enforcement of these requirements will be carried out by means of the respective permits issued to municipalities, counties, industries, and other entities discharging to the waters considered herein, and failure to comply with the permit conditions will result in legal action in accordance with the provisions of law.

SCHEDULES OF CORRECTIVE MEASURES FOR SCIOTO RIVER BASIN

Corrective measures for the abatement of water pollution from discharges of sewage and industrial wastes will be provided for the following discharges according to the indicated time schedules.

Wastes from Municipalities, Etc.

1. Disinfection.

All sewage discharges to meet downstream water uses will be adequately disinfected. Such disinfection facilities will be installed no later than June 1, 1969.

2. Treatment Requirements for Scioto River Downstream from Columbus.

Columbus

a. The new Southerly and the existing Jackson Pike wastewater treatment plants should be operated to obtain the most effective reduction of pollution loads in order to enhance the water quality of the receiving stream. Prompt steps should be taken to maximize treatment of the waste water flows.

b. Planning, construction, and operation of treatment facilities will be scheduled so that the water quality in this stretch of the Scioto River will meet the standards for:

(1) Aquatic Life B - Industrial Water Supply and Agriculture and Stock Watering Uses.

Provide necessary treatment by June 1, 1968.

(2) Enhancement of stream water quality leading toward All Water Uses.

	Completion Dates
Detail Plans & Specifications for Supplementary Treatment Facilities to provide a very high degree of treatment (over 95% of susp.solids and B.O.D. reduction)	7-1-69
Construct and place in operation	1-1-72

(3) All Water Uses.

	Completion Dates
Report and General Plan	1-1-71
Detail Plans & Specifications	7-1-72
Construct and place in operation	1-1-75

3. Secondary Treatment.

New secondary treatment (biochemical oxidation) plants where no treatment facilities now exist will be provided by the following entities according to the indicated time schedules:

Entity	Completion Dates: Report and Gen.Plan	Det. Plans & Financing	Construction
Galena	1-1-70	1-1-71	1-1-72
Pickerington	Approved	7-1-70	1-1-72
Lithopolis	Approved	7-1-70	1-1-72
Cardington		Approved	1-1-70
Franklin County Central College, Gould Park Areas, etc.	7-1-69	7-1-70	1-1-72

4. New secondary treatment facilities which will be in addition to existing facilities will be provided by the following communities according to the indicated time schedules:

Municipality	Completion Dates: Report and Gen.Plan	Det. Plans & Financing	Construction
McGuffey	7-1-69	7-1-70	7-1-71
Circleville	1-1-69 (Rev.)	7-1-70	1-1-72
Chillicothe	6-1-68	7-1-69	1-1-71
Waverly	1-1-69	1-1-70	1-1-71
Piketon	1-1-69	7-1-70	7-1-71
Frankfort	Approved	7-1-68	1-1-70

5. Enlargements of existing plants of the following communities having secondary treatment facilities will be provided according to the indicated time schedules:

Municipality	Completion Dates: Report and Gen.Plan	Det. Plans & Financing	Construction
Marion	1-1-70	1-1-71	1-1-72
Delaware	Approved	8-1-70	1-1-72
Washington C.H.	Approved	7-1-69	7-1-70
Mechanicsburg	7-1-68	7-1-69	7-1-70
Hillsboro	Approved	4-1-68	7-1-70
Greenfield	7-1-68	7-1-69	1-1-71
Jackson	7-1-68	7-1-69	1-1-71
Marysville	1-1-69	7-1-70	1-1-72
Richwood	7-1-69	7-1-70	7-1-71

6. Connection to Columbus sewerage system:

Westerville - All of city tributary by 1-1-73.
Gahanna - All of village tributary 12-7-67.
Hilliard - All of city tributary 10-19-67.

Industrial Wastes

Additions or improvements to the facilities for treatment of industrial wastes from the following establishments so that adequate treatment or control is provided will be made in accordance with the indicated time schedules:

Name of Industry	Completion Dates	
	Detail Plans	Construction
Container Corp. of America Circleville Division Circleville	7-1-68	1-1-70
E. I. duPont deNemours & Co., Inc. Pickaway Co.-Pickaway Twp.	1-1-69	1-1-70
Darby Plains Dairy Madison Co.-Darby Twp.	Apprvd '67	3-1-68
Crown Zellerbach Corporation Baltimore	1-1-70	1-1-71
Mead Corporation Chillicothe	1-1-69	1-1-70

cy: L E Fuller 3/13/70
R M Rutherford
A H Wernecke

Please furnish comments to C D Tabor by March 23.

DRAFT

cc. CDT ← Aus.
AHW
LEF
RMR
Any comments by March 23.

HEALTH PROTECTION APPRAISAL GOODYEAR ATOMIC CORPORATION NOVEMBER 1969

I. Purpose and Scope

The health physics, industrial hygiene and environmental pollution portions of the annual health protection appraisal of Goodyear Atomic Corporation, at the Portsmouth Gaseous Diffusion Plant, were conducted November 18-20, 1969, by J. F. Wing, Health and Nuclear Safety Branch, Safety Division, ORO. The remaining portions of the appraisal were completed in April 1969.

II. Summary

The GAT health protection program continues to be adequate. Staff efforts regarding pollution abatement have been exemplary especially in relation to the control of particulate emissions from the steam plant and in the implementation and operation of the sanitary landfill.

III. Recommendations

A. Implementation of 1968 Recommendations

1. Provision of an independent safeguard for the 300 KV X-ray machine: Although the facility has not been in use since early 1969, a radiation detector has been fabricated and will be installed before reuse.

2. Provision of a means to prevent the pressure relief venting of contamination into occupied areas at the Oxide Conversion Facility tower glove box area: Subsequent clarification of the existing control equipment precludes the need for implementation.

3/26/70

Comments furnished verbally to R.V.A. on 3/26/70 RWB.

APPROVED FOR RELEASE BY:

3. Resume leak testing sealed sources on a routine basis: This practice has been resumed for the radium sources on a semiannual basis. None were found leaking.

4. Evaluate the adequacy of the surface contamination control practices currently employed in X-746: The practices found in the area indicated the procedures being followed by the operations personnel are not in accordance with the plan described in the response to the 1968 Health Protection Appraisal, "Comments on Health Protection Appraisal, GAT-November 1968," dated March 31, 1969, to R. V. Anderson from G. H. Reynolds. The existing practices consist of sporadic surveys at intervals up to four weeks apart and no use appeared to be made of the survey data "to aid in identifying recurrent contamination sources." There was no indication that the contamination levels specified in the above reference were being observed. Based on the visit to the area, a review of the survey data, and discussion with supervision, it is concluded this recommendation has not been effectively acted upon.

5. Consider the installation of a post-chlorination facility for the sewage plant effluent: The FY 71 capital equipment budget includes $1800 for this purpose.

6. Clearly identify the source of the green color and chromate concentrations observed in the stream at Water Sampling Station 11: This recommendation has been satisfactorily complied with as discussed in Section IV-D4.

B. Recommendations of the 1969 Appraisal

It is recommended that:

1. GAT perform a review of the justification for the current film badge program commensurate with an acceptable level of health protection. (General concurrence has been received relative to this recommendation - Section IV-E).

2. Appropriate action be taken to effectively implement the contamination control plan for the X-746G Sampling Area (Section III-A4).

IV. Findings

A. Restrictions

Routine use of the mobile whole body counter continues to provide assurance that operational controls are adequate to preclude work restrictions (since the previous appraisal) on any employees other than two "hold-overs" from the 1965 investigation. During this reporting period two employees were involved in a tails release on July 21, 1969, resulting in the five-day hospitalization of one man with traumatic injuries and an eight-day work restriction for the other man due to his urinary uranium concentration. Subsequent whole body counts on these employees confirmed the absence of a significant internal exposure.

B. Oxide Conversion Facility X-705

This facility was shut down October 7, 1969, and although at least two tower "burn throughs" occurred since the previous appraisal, none were believed to have had health physics significance. Due to the amount of development and maintenance work being performed, virtually full-time health physics surveillance was required. Prior to another start up of this facility, it is understood the following matters would be considered in order to avoid or minimize subsequent operational problems: more preplanning of maintenance operations, improvements for the screw rodding operation, improved containment for the calciner, the addition of another vacuum system, and elimination of the glove box around the HEPA filter enclosure serving the new vacuum system.

C. Hearing Conservation

The health protection staff made noise surveys in June 1969 of those areas which might approach the Walsh-Healey limit of 90 dBA. Noise levels in the vicinity of the dry air station in X-330 were the only ones which clearly exceeded this limit and corrective recommendations were made to appropriate supervision. Previously, the low temperature compressors in X-705 were shrouded to adequately reduce the occupational noise exposure. The health protection staff plans to alter the in-plant noise exposure guide to recognize ~~with~~ the new Federal standards; however, the present guides for engineering control already conform to this standard.

D. Environmental Pollution

1. Steam Plant Emissions

Subsequent to the previous appraisal visit, stack sampling by GAT forces using purchased equipment confirmed that modest alterations to the existing mechanical fly ash collectors had been adequate to reduce the particulate emissions to meet the requirements of AECM-0510. Full compliance will be achieved following the installation of smoke indicator devices for which funds have been allocated.

2. Open Burning and Incineration

An inspection of the sanitary landfill confirmed it is being operated in a very satisfactory manner. There was no evidence of blowing refuse and the entire area appeared neat and orderly. The status of the acquisition of incineration equipment to meet the requirements of AECM-0510 remain as previously reported.

3. Sewage Treatment Plant

Data confirm the sewage plant effluent continues to be maintained at a level consistent with the requirements of AECM-0510 with the exception of no post-chlorination. One thousand eight hundred dollars is included in the FY 1971 capital equipment budget to acquire an adequate post-chlorination capability.

4. Process Discharge Surveillance

The automated sampling, analyses and recording stations, installed approximately one year ago, continue to be plagued with maintenance problems. Although these stations ultimately will provide more reliable data than the previous grab samples, the equipment is not yet completely dependable.

During the previous appraisal, the reviewers questioned the reason for the lime green color in the stream at Station 11 and downstream for several stream miles. The GAT staff investigated this in detail and reported their findings in subsequent correspondence concluding with the letter, "Annual Health Protection Appraisal - 1968," dated August 11, 1969, to R. V. Anderson from G. H. Reynolds. The investigation appears to have been complete, the information was responsive to the question and the matter is considered closed.

GAT plans to participate in a gaseous diffusion plant committee effort to review the current and projected chromate discharges expected at levels up to 9200 MW. This committee plans to evaluate the most reasonable alternatives for achieving compliance with the anticipated receiving stream chromate limit of 0.05 PPM including the use of a lower chromium concentration in the recirculating cooling water system, substitution

of other than chromium-bearing corrosion inhibitors, innovative engineering technqiues which would reduce the effluent concentration, as well as chromate ion exchange recovery systems and chromate precipitation methods.

5. Reports to State of Ohio

Excellent rapport is maintained with pollution abatement personnel at the State level. Since the early 1950's, GAT has been sending to the State monthly data summaries for hexavalent chromium, pH, alpha, beta-gamma, and fluoride results for all routine on and off-site water samples. In addition, a monthly summary of the sewage plant effluent is provided including data for biochemical oxygen demand, pH, suspended solids and relative stability.

F. Film Badge Usage

The annual consumption of films for monitoring purposes appears to be inordinately large in comparison with the need from a health protection viewpoint. According to the data included in GAT-R-517, "Health and Safety Activities Report for 1968," approximately 12,890 films were used. From discussions with the health protection staff, it appears only about 12 employees require monitoring in accordance with AECM Appendix 0524, I-B4. While it may be desirable to monitor more than 12 employees, and perhaps as many as a few hundred, it appears the existing film badge program is far more inclusive than necessary

and should be reduced significantly. Using conservative figures for the cost per film and associated handling, recording, etc., it appears that an annual saving of about $6,000 might be realized if only accident monitoring were provided most employees and visitors. From the results of the other similar installations, it would appear the current GAT film monitoring program can be reduced without the loss of adequate safety margins.

(Prior to preparation of this report, this aspect was pursued through the Area Office and general concurrence was received in the letter "Personnel Monitoring Procedures" to R. V. Anderson from G. H. Reynolds dated January 20, 1970.)

F. Ventilation Studies

It was learned the Engineering staff has initiated a study of the heating and ventilation systems in the process and support facilities and these are scheduled through FY 1975. The total estimated to implement the upgrading is expected to approximate $500,000. The initial review is for X-705 to be completed about January 1970 and may involve replacement of approximately 400 feet of ductwork plus maintenance repair and/or replacement of about eleven 15,000 cfm roof ventilators.

G. Radiation Alarm Testing

The procedure used by GAT forces for testing radiation alarms was reviewed in detail and found to be quite satisfactory. All stations are individually source tested once each six months. The procedure includes close coordination with the area supervisor and the emergency control center and involves shutting off at the gas bottle the nitrogen supply to the claxon horn. A radiation source is used to alarm the electronic circuit which simultaneously yields an alarm in the emergency control center and a local alarm (the solenoid in the nitrogen line opens to the claxon and there is enough contained pressure to allow the horn to "beep").

RBB
Comments by
10:00 AM
12/28/71

JJE
RWB

HEALTH PROTECTION APPRAISAL

GOODYEAR ATOMIC CORPORATION

BY

WILLIAM A. PRYOR AND THOMAS M. JELINEK
HEALTH AND NUCLEAR SAFETY BRANCH

AND

JEROME F. WING
WASTE MANAGEMENT & POLLUTION CONTROL BRANCH

NOVEMBER 1971

2 cys

Mr. Tabor:

We would appreciate any comments you may have on the factual information in the report by 12/28.

Ray Sullivan

APPROVED FOR RELEASE BY:
M. M. Earnhardt

APPROVED FOR RELEASE BY:
M. M. Earnhardt

I. Purpose and Scope

The annual appraisal of the Goodyear Atomic Corporation, Portsmouth Gaseous Diffusion Plant, Portsmouth, Ohio, in the programs of health and nuclear safety and waste management and pollution control was conducted by representatives of the ORO Safety and Environmental Control Division on November 2-4, 1971. The appraisers were T. M. Jelinek and W. A. Pryor of the Health and Nuclear Safety Branch, and J. F. Wing of the Waste Management and Pollution Control Branch.

II. Summary

The GAT health protection and environmental control programs continue at a satisfactory level. Nine recommendations for improvement of specific programs are presented.

III. Recommendations

A. Implementation of 1970 Recommendations

1. Recommendation in regard to strengthening administrative controls X-744G to assure that UNH bottles could not fall into geometrically unsafe mop buckets.

   Action: Administrative controls include restricting the bucket to the aisle centers during which time no containers of uranium will be moved.

2. Recommendation in regard to a safety analysis of the tails withdrawal system.

   Action: The safety analysis of the tails withdrawal area is underway. Since this is a comprehensive study, which involves computer calculations of many case situations, the final report will be reviewed by ORO prior to final acceptance of the corrective action. ~ 3/1/72

3. Appropriate action be taken to determine the source(s) of contamination in the X-746 sampling area.

   Action: The sources of contamination have been identified. The area has been made a mandatory shoe cover area, and modifications have been made in operating procedures to reduce the levels of contamination. However, GAT should consider taking additional action as suggested in Section IV F.2.

4. A survey should be made of the new microwave diathermy unit to determine the beam intensity as a function of the unit's power level and distance from the antenna.

   Action: The recommended survey was performed by the Public Health Service. Results indicate no particular problem with the unit, but cautioned against possible eye damage when the unit is used at full power for upper back and lower neck treatment. Operating procedures for this unit have been modified to satisfactorily limit eye exposure.

B. Recommendations of the 1971 Appraisal

The appraisal committee recommends that GAT:

1. Review the UNH storage bottle failure problem in X-744G and take appropriate action for early processing and/or repackaging to minimize current nuclear safety and health physics problems associated with these failures. A minimal test program to determine the optimum storage bottles for long term UNH storage should also be initiated. (See Section IV E.2.)

2. Minimize combustibles in fissile storage areas. (See Section IV E.2.)

3. In lieu of marking evacuation routes in the cascade buildings, as recommended by the Nuclear Safety consultants, improve upon the identify of the exits through the use of iridescent paints, etc. (See Section IV E.1.)

4. A comprehensive noise level survey be performed plant-wide, results suitably documented, and correction or protection measures be initiated as required. (See Section IV F.5.)

5. A review be performed of the laser safety practices in use at the plant-site. (See Section IV F.6.)

6. The use of HEPA filters be reviewed; those required for health protection be identified and tested in-place. (See Section IV F.7.)

7. Re-evaluate the adequacy of the sampling and analytical procedures used to determine the concentration of fluorides in the ambient air. (See Section IV A.3.d.)

8. Due to the potential impact of proposed State air pollution regulations concerning sulfur oxides, the long range plan should include funds necessary to acquire low sulfur coal. (See Section IV A.3.b.)

9. Proceed with the implementation of the sampling activities associated with the rad effluent reduction program. (See Section IV B.)

IV. Findings

A. Environmental Pollution

1. Organization

In mid-February 1971 GAT management formed the Environmental Control Committee to coordinate the planning, budgeting, and implementation of pollution abatement programs. Originally the committee was chaired by J. J. Eyre, Superintendent, Equal Opportunity Activities, with representatives from the Production, Technical, Engineering and Industrial Relations Divisions. The organization was realigned in June with V. S. Emler, Supervisor, Environmental Control, as chairman reporting to C. D. Tabor, General Manager, through Mr. Eyre. The initial efforts of the committee have been directed toward a technical assessment of GAT's potential pollution sources and coordination with the technical and engineering staffs on problem solving. Their progress has been excellent and the committee should prove to be a valuable asset to GAT management.

2. Liquid Waste Management

a. Construction Projects

Subsequent to the November 4, 1970, appraisal visit by FWQA (now EPA) and State of Ohio representatives, GAT has made good progress toward implementing the recommendations contained in the June 22, 1971, EPA report. A project to provide post-chlorination of the sewage plant effluent, which was recommended by the FWQA but was budgeted prior to their visit, was completed during the week of November 1, 1971, ($35,500). Although the bulk of the water treatment plant sludge originally was piped to one of four sludge lagoons, it occasionally was necessary to discharge a small fraction

Actual Operation 12/15/71

to a nearby surface drainage ditch leading eventually to Little Beaver Creek. The engineering on a project to divert this fraction to the lagoon system is 80% completed and project completion is scheduled for February 15, 1972 ($27,500).

As part of the rad effluent reduction program, an inventory of onsite generation and release points indicated that about 90% of the uranium discharged annually via liquid streams could be precipitated and retained in the X-701-B Holding Pond (about 76 Kg in 1969) by providing equipment to appropriately adjust the pH. The engineering on this project is about 60% completed and project completion is scheduled for May 31, 1972 ($55,000).

The $1.1 million line item project which was proposed for FY 1973 to reduce chromate discharges has been postponed by AEC until at least FY 1974.

b. Diking

Controls for accidental releases of bulk stored chemicals are excellent. Two 10,000 gallon concentrated sulfuric acid tanks are cement diked with about four feet of limestone over a clay base which has a French drain with normally closed valve leading to the storm sewer and then to Little Beaver Creek. The liquid level in the tanks is checked twice each shift. The roofed and moderately enclosed HF storage area contains three tanks and is cement diked with a one-tank capacity. The dike has a gravity drain to a limestone-filled neutralization basin. The tanks are tested ultrasonically on a three year interval, one tank each year. Routinely, one tank is usually full, one in use, and one is always empty. A capability exists to transfer from one tank to another. The neutralization basin was filled with rain water apparently due to an unintentional plug in the drain. GAT personnel indicated the plug would be cleared and the basin drained.

Another, apparently dry, limestone neutralization basin nearby receives HF scrubber liquor and occasional discharges of electrolyte from the fluorine generators.

c. Shop Area

A review of liquid waste management practices in the X-720 Shop Area resulted in no serious problems; however, two relatively small pollution sources should be evaluated to see if there may be reasonably inexpensive solutions which may be applied. The paint spray booth water curtain consisting of about 600 gallons of paint laden water is discharged to the storm sewer system about twice each year. The use of an emulsifier which would allow the paint dregs to be separated prior to discharge might be considered. The effluent from the electric motor cleaning operation containing an organic solvent is also discharged to the storm sewer. Although no information was readily available to quantify the discharge and thereby assess the seriousness, it may be possible, depending upon the characteristics of the solvent, to collect the water-solvent mixture, separate it in a simple gravity separatory process, discard the water, and reuse the solvent.

are separated now.

will be sampled & studied

d. Chromate Discharges

The blowdown volume currently varies between 50,000-100,000 gallons per day and monitoring data continue to demonstrate that 0.05 ppm hexavalent chromium is not exceeded in the Scioto River after a modest zone of mixing. This practice is permissible under the existing Ohio water quality standards; however, a recommendation resulting from the November 1970 FWQA (EPA) visit calls for the pipeline effluent to meet the Ohio River Valley Water Sanitation Commission (ORSANCO) limit of 0.05 ppm. This was appealed and subsequent to this ORO appraisal visit, the response from the Chicago EPA office said we should plan to meet the Ohio standards; however, if it was evident that Ohio was planning to apply the ORSANCO chromium effluent limit to the Scioto River in the foreseeable future, abatement equipment should be designed on that basis. ORO will resolve this question with appropriate Ohio representatives.

The blowdown volume is essentially a function of the number of reconcentration cycles and the MW level. On July 1, 1971, the power level increased from 500 MW to 700 MW and is scheduled to be 1000 MW on December 1, 1971. The blowdown volume, river flow, and resulting chromate concentrations in the

Scioto should be followed carefully as possible empirical indicators of the potential effect at future power levels.

The effluent from Station 11 was routinely less than 0.05 ppm hexavalent chromium during the past year. Previously excursions above 0.05 ppm were observed; however, improved administrative control appears to have corrected this.

3. Air Pollution

a. Incineration

The replacement of two non-compliant incineration operations with a single compliant incinerator was completed in June 1971 ($46,434), and this brings GAT into full accord with the existing state and Federal regulations on open burning and incineration.

b. Steam Plant

Particulate emissions from the steam plant were resampled February 23-25 and March 3, 1971, and found to be in compliance with 42 CFR 76 (0.17 and 0.18 lbs/million Btu versus the limit of 0.4 lbs/million Btu). These results compare favorably with tests made on February 9-10, 1970 (0.17 and 0.19 lbs/million Btu). The smoke detectors and recorders, installed in October 1969, are calibrated in Ringlemann units with the calibration checked monthly by the Instrument Shop. Emissions of sulfur oxides were sampled March 25, 1971, when 3.1% sulfur coal was being burned. The stack concentration was 1,320 ppm by volume SO_2 and 2 ppm SO_3. Due to the location of the Portsmouth Gaseous Diffusion Plant, the only fuel reasonably available is Ohio strip mine coal which typically contains 3-4% sulfur; however, outplant air samples continue to indicate compliance with the national ambient air quality standard for SO_2.

The air pollution abatement regulations expected to be adopted by Ohio and approved by EPA include the provision for official monitoring stations to be installed in air quality control regions. The number of stations to be installed is a function of the contaminant in question and the population density.

In a predominantly rural region it is possible that only one SO_2 monitor would be used and that it would be located in the area of the highest population density. The proposed regulations require that in the event data from this station show the ambient air quality standard for SO_2 is being exceeded, all fuel burning facilities in the region would be required to reduce SO_2 emissions. Since a change to higher fuel quality such as gas or No. 2 fuel oil are not "live" options at GAT and there is no backup alternate fuel, it is recommended that funds be included in the long range budget for low sulfur coal beginning with FY 1974. Currently it is estimated that 1.25% sulfur coal would range between $13.25-$13.50 per ton as compared with $8.10 per ton for about 3.5% sulfur coal. Based on an annual consumption of 40,000 tons, the increased fuel cost would be about $200,000 per year.

c. Process Emissions

A more detailed classified inventory of fluorine and NO_x emissions at current and projected power levels was prepared September 9, 1971, and discusses possible reduction actions applicable to the various sources. A pilot plant operation is underway to study fluoride disposal techniques using caustic scrubbing. Process emission control planning is currently being coordinated through the ORO Environmental Pollution Control Task Force which also assures an information exchange between applicable ORO facilities.

d. Environmental Monitoring

Data for fluorides at PORT indicate ambient air concentrations which usually exceed the anticipated limit of 1 ppb averaged over 30 days while data from PAD and ORGDP usually indicate dependable compliance. While it is possible that this difference is valid, it may be possible that the difference could be due either to the manner by which the raw data are assembled, i.e., lumping on and offsite data together; by variations inherent in using grab sample data; or perhaps the sampling or analytical procedure is too insensitive at these very low concentrations, i.e., sample length perhaps too short. It is recommended that GAT re-evaluate the adequacy of the current sampling and analytical technique and data

treatment used to determine the concentration of fluorides in the ambient offsite air. A project to provide five continuous offsite air monitoring stations is scheduled for completion March 1, 1972 ($19,000). The engineering is about 50% completed and arrangements have been made with the county for the necessary easements. The ability to collect a longer sample at fixed offsite locations will aid in improving the sensitivity of the air monitoring data.

B. Rad Effluent Reduction

In response to a request to evaluate measures which might be taken to reduce the discharges of radioactivity to the environment, although already in compliance with existing regulations, GAT summarized the CY 1970 effluent releases in GAT-R-575 dated June 28, 1971. The data and recommendations contained therein were informally discussed with PORT and GAT staffs prior to this visit and in detail at this time. ORO previously had concurred in the recommendation to install a pH adjustment capability at the X-701B Holding Pond and now concurs with the recommendation to install a stack sampler at the X-744G storage and sampling warehouse in order to better quantify the release of radioactivity. It may be possible to borrow a spare sampler from the FMPC. ORO also concurs in the recommendation to monitor the laundry effluent for radioactivity. Additionally, the sewage plant effluent should be monitored for radioactivity. Since the laundry effluent flow is estimated, it may be necessary to measure the flow, at least temporarily, to better quantify this source. Follow-up should be done to explore and verify the unexpected releases indicated in Big Run and the West Drainage Creek (Points L-1 and L-2 in the reference document).

C. Pest Control Programs

A review of pesticide and herbicide use, storage, and personnel training found all facets to be satisfactory. Only registered materials are used and of the planned programs require reporting to the President's Working Group on Pesticides. Thus far, two of the staff members have attended the PHS course at the CDC in Atlanta. The knowledge gained there is used to guide their choices and use of pesticides and herbicides as well as to guide the applicators in safe practices.

D. Timber Harvesting

A tour was made of the timber harvesting operation being conducted in nine areas totaling 156 acres of mature forest in the PORT buffer zone. The areas were first reviewed by professional foresters who recommended clear cutting and supplied the guidelines being used by the logging contractors. Periodic visits are made to the logging areas by AEC and GAT personnel to monitor compliance with these guides and, when necessary, directions for remedial measures are provided to the loggers. Only minor erosion was noted in one logging road, and the loggers had already been directed to correct it. Cooperation has been excellent to date, and the logging is about 35% completed. Following completion, the roads providing access to these areas will probably be left intact for whatever incidental or emergency use may be required.

E. Nuclear Safety

1. Nuclear Safety Consultants

At the request of GAT management, particular attention was directed to the recommendation made by the Nuclear Safety Consultants Committee in October 1970 regarding the marking of evacuation routes in the cascade buildings. The GAT Emergency Planning staff had disagreed with the consultants' recommendation primarily due to the minimal number of personnel in the cascade buildings and due to the enormous size of these buildings.

The reviewer visited the cascade operating floors to observe present conditions. There would be essentially no gain in an extensive marking of evacuation routes. However, there would be merit in improving the identification of building exits through the use of iridescent paint, etc., which would meet the intent of the consultants' recommendation.

2. Material Handling Operations

As previously noted in the 1970 appraisal, the failure rate of the plastic bottles containing highly enriched UNH crystals, which have been returned from licensees under scrap recovery contracts in storage in the X-744G warehouse appears to be

accelerating. During the tour of this warehouse, approximately ten new bottle failures, which released material to storage shelves and to the floor, were observed by the appraiser. Numerous other bottles which had failed earlier had been placed in the polyethylene bags. Due to current requirements for UF_6 feed to the cascade, this material will probably remain in storage for some extended period of time rather than being immediately processed to UF_6.

Other action which could be taken to minimize the nuclear safety and health physics problems would include repackaging. However, since returns from scrap recovery contracts are continuing, the optimum action appears to be convert the UNH to a form which would be more compatible with long term storage. U3O8, which is acceptable to GAT, would appear to be the most optimum form. This was recommended to the ORO Production Division.

The X-744-H warehouse is used as a storage area for VHE and HE UF_6 in 5" ID cylinders. Other materials of a classified nature, which are also stored here, are contained in weathered cardboard boxes. Such combustibles should be removed from fissile materials storage areas. Proposed criteria for these storage areas preclude the presence of combustibles.

3. Significant Incidents

One significant incident occurred during the report period and involved an accumulation of UO_2F_2 in the 8" diameter freon degrader, located in X-25-7. The accumulation was discovered through a survey with the neutron probe. An investigation was initiated, and the committee recommended replacement with a nuclearly safe 5" diameter reactor. Until the change could be completed, the reactor is being checked with the neutron probe once per shift.

4. Feed Vaporization

As a result of earlier studies, Raschig rings made of Polyvynaldichloride and dry boric acid have been placed in the X-342 steam vaporizers to serve as neutron absorbers in event of a release from feed cylinders containing slightly

enriched UF_6. An ANS standard for use of these Raschig rings is being developed. A nuclearly safe solution collection system has also been installed along with improved leak detectors.

5. Technical Studies

GAT is studying the effect of concrete reflection on cylinders of highly enriched UF_6. A series of critical experiments for verification of results has been proposed. Due to facility construction requirements for fissile material storage, which will be implemented in the near future, these technical studies should be completed.

C. Transportation Safety

1. Offsite Shipments

Radioactive materials shipped from Portsmouth consist primarily of enriched UF_6 to domestic and foreign customers. The material is shipped in customer-owned protective packages. Other materials shipped include scrap in DOT Specification 6L and 6M containers.

All offsite containers are inspected by GAT prior to shipment, and minor defects are corrected. However, containers having been damaged significantly are not used, and the customer is so informed. One such protective package was observed by the appraiser. This particular protective package had been involved in overseas service and was received at Portsmouth in a damaged condition. It was appropriately tagged pending a decision of the customer.

The following DOT Special Permits, the containers involved, and the material shipped are in use at Portsmouth:

DOT SP	Container	Material
4909	Family of UF_6 cylinders in protective packages	UF_6 at any enrichment
5663	5" ID UF_6 cylinders in United Nuclear Corp. protective package	UF_6 at any enrichment

DOT SP	Container	Material
5765	Vermiculite Container	Solid uranium at any enrichment
6553	10-ton UF_6 cylinder in protective package	UF_6 up to 1.5% enrichment

2. Onsite Shipments

Onsite shipments of radioactive material fall into three categories: (1) UF_6, (2) solutions, and (3) other solids, i.e., UNH, uranium oxide, etc. UF_6 is transported as follows:

10 or 14-ton cylinders - singly on strattlebuggy
30" diameter cylinder - singly on forklift
8" and 12" diameter cylinders - in dollies by truck
5" diameter cylinder - in dollies by truck and in a specially designed cart (up to 24 cylinders)

solutions and other solids such as UNH, oxides, etc. are transported as follows:

Twelve position carts and "bread board" (boards with spaced cylindrical holders) which is positioned on a truck.

F. Health Physics and Industrial Hygiene

1. Personnel Monitoring

Personnel radiation exposure is monitored through a well balanced program of film badging, bioassay, and in vivo lung counting. Approximately 400 film badges are processed quarterly, these badges being assigned to personnel with the greatest exposure potential. All employees identification badges contain film for use in accident evaluation. In addition to the regular 400 badges processed, about 100 other film badges are selected at random and processed quarterly to substantiate the low exposure of other personnel. Also, about fifteen film badges are placed in specific areas of the plant and processed quarterly as an indication of maximum exposure potential. All external radiation exposures in the last year have been well below the guidelines of AECM-0524.

The frequency of bioassay varies from weekly to semiannually. Approximately 25 GAT employees are on a weekly schedule. Bioassay records indicate that six employees have been placed on work restrictions due to exceeding the plant action level on uranium in the urine.

The IVRML was at GAT in July 1971. No additional personnel were found to have greater than one-half body burden of uranium. Two GAT employees continue on work restriction as a result of an incident in 1965, [though neither of these now indicate greater than one-half body burden of uranium.] One employee placed on work restriction last year was whole body counted at Y-12. Results indicated a body burden of 39 micrograms uranium, compared to 206 micrograms as determined with the IVRML; the work restriction was removed. No explanation of the initial high count has been determined.

1 - 0.6 BB
1 - 0.7 BB

The personnel monitoring program is considered satisfactory.

2. X-746 Sampling Facility

Contamination control has been a continual problem in the 746 sampling facility. Sources of contamination have been identified and modifications have been made to operating procedures to minimize contamination. However, residual contamination in and under the asbestos tile floor covering, and occasional equipment failure or operator error have made it necessary to make the area a mandatory shoe cover area. GAT is hopeful of relocating this facility in the future. However, since this area will continue in use for some time, and visitors are allowed in the facility, it is suggested that the following actions be taken: (1) the old tile floor covering be removed and replaced with a more suitable material, or the base concrete floor be cleaned and painted, (2) visitors be monitored for contamination prior to leaving the facility, and (3) the location of point ventilation systems (such as at the pigtail to cylinder connection) be reviewed for proper placement.

Operators of the sampling facility are on a weekly bioassay schedule. No serious inhalation problems have been noticed for some time. This correlates well with the appreciable reduction

in airborne contamination. Contamination surveys and subsequent decontamination of the facility have been satisfactory. It is noted that the contamination is not readily dispersible since adjacent areas have been found relatively free of contamination. Supervision of the facility is to be commended for its continued attention to the problem.

3. Radiation Sources

Sealed sources are inventoried and leak checked semiannually. Records are maintained indicating source location, strength, and leak check results.

There are six X-ray machines on the plant site. Industrial Hygiene and Health Physics Department reviews and approves each X-ray installation operation. Changes in the operation must be re-approved by the department. Control and operation of these devices appear to be satisfactory.

4. Instrument Calibration

The GAT Instrument Maintenance group is responsible for maintaining and calibrating all radiation detection instruments. Portable alpha survey meters are calibrated monthly. Maintenance and calibration of other portable and permanent instrumentation is done at least quarterly. All instruments are calibrated at the highest range practical. Instruments which are intended for emergency type monitoring are calibrated up to 5 R/hr by the IH&HP Department. All instruments are tagged indicating the due date for the next calibration.

The instrument calibration program is considered to be satisfactory.

5. Noise

GAT has recently purchased new sound level survey instruments. Several areas of the plant site have been surveyed and two areas found where sound levels were in excess of OSHA standards. Both of these areas were corrected by engineering design. Currently, there are no areas within the plant where ear protection is considered mandatory. During a walk through the

oxide conversion facility (X-705), high background noise levels as well as very loud impact noises were noted. GAT is encouraged to perform detailed noise surveys in this area, as well as plant-wide.

6. Lasers and Microwave Devices

There is one laser at the GAT plant which is currently in use. IH&HP Department has never reviewed the operation for compliance with suggested laser safety practices. ORO urges that this be accomplished.

There are no microwave devices currently in use at GAT.

7. HEPA Filters

A brief review of the use of HEPA filters in the X-705 facility was conducted. Varying enrichments of U-235 are handled in this facility. It appears that some HEPA filters are required for accountability purposes, while others are required for health protection reasons. Although most systems have stack monitors beyond the filters and differential pressure manometers across the filters, neither method is satisfactory to assure that the required filter efficiency is maintained. It was suggested during this appraisal that the use of HEPA filters be reviewed on the plant site, that those HEPA filters required for health protection purposes be identified, and that a method for in-place testing of those filters required for health protection be developed.

G. Occupational Medicine

The occupational medicine program at GAT continues to be satisfactory. Staffing in the medical department has been reduced by one clerk, but this should have little effect on the overall medical program. Other staffing, physical examination frequency, audiometric examinations, etc. continue as discussed in last year's appraisal.

The microwave diathermy unit has been surveyed by the Public Health Service. Several recommendations relative to the operation of the unit were made by the surveyor. These recommendations have been implemented by the medical staff.

GAT intends to purchase new audiometric equipment in the near future. Meanwhile, the present equipment is calibrated at the plant site (in addition to a manufacturer's calibration every two years) utilizing equipment recently purchased by the Industrial Hygiene and Health Physics Department. The operator of the audiometric equipment has recently become certified by the State of Ohio.

The GAT medical staff is keenly aware of the appropriateness of providing consultation and advice to employees for off-the-job medical problems. The medical staff spends a considerable portion of its time in such consultations with employees and supervision. Topics of concern in the past have been alcoholism, absenteeism, and job satisfaction. Drugs have apparently not been a significant problem at the plant site.

The Medical Division's capabilities for handling radioactively contaminated patients were reviewed. Considering the low probability of a serious accident involving contamination and the relative low radiotoxicity of the contaminants, facilities appear to be adequate.

The Medical Director is in the process of holding discussions with a local hospital concerning the treatment and handling of contaminated patients. It was pointed out by the Medical Director that no person contaminated with radioactive materials has ever been sent to an offsite hospital.

Reviewers:

William A. Pryor
Health & Nuclear Safety Branch

Thomas M. Jelinek
Health & Nuclear Safety Branch

Jerome F. Wing, Chief
Waste Management & Pollution
Control Branch

INTERDEPARTMENTAL CORRESPONDENCE

TO: C. D. Tabor, General Manager

DEPT: Administration, D-101

LOCATION: X-100

DATE: December 28, 1971

FROM DEPT: 230

CODE NO:

REFERENCE:

SUBJECT: ENVIRONMENTAL CONTROL AND HEALTH PHYSICS COMMENTS ON HEALTH PROTECTION APPRAISAL - NOVEMBER, 1971

All comments are made on the body of the report rather than the specific recommendations on Page 2.

Regarding Item IV.a.1., Organization - the comment relating to the present reporting position of the Environment Control Committee was misconstrued slightly. The statement was made that Mr. Eyre reports directly to the General Manager when, in fact, Eyre reports to the Manager of Industrial Relations.

Item 2.a. relating to construction projects, mentioned the completion date of the post-chlorination project as November 1, 1971. Due to delayed equipment deliveries, this facility went into operation on December 15, 1971.

The sludge line project has been changed in scope to correct back-wash from the water softening plant. A new directive request for change to expand this project was submitted to AEC in November, 1971. The engineering work on the project is approximately 80% completed at the present time. The completion date on the project will be delayed to approximately November 17, 1972.

The X-701-B holding pond project will also be delayed to November 1, 1972. This is caused by required additional engineering for a valve in the discharge line from X-705 to accomplish criticality requirements. This will also add additional cost to the project. Another reason for the delay of the completion date is that it has been decided that the contractor for the project must be cleared rather than extend a security fence around this facility to enable uncleared contractors to work on the project.

The 1.1 million dollar line item project to reduce chromate discharge is considered a must for submission in the FY-1974 budget.

Item IV.2.b. relating to the plugged neutralization basin for the HF storage area has been corrected. This facility has been drained and is presently operating as it is suppose to.

Item IV.a.2.c. regarding the Shop Area will require very little corrective action. Actually, there was a slight misinterpretation by Jerry Wing regarding the disposal of the water from the paint spray booth. This facility appears to be quite adequate in that the paint dregs are not drained to the storm sewers but rather they are shoveled out into the drums after the water is drained off. The motor cleaning facility is not considered a significant pollution problem since all that is being drained from this pan is a mixture of water and detergent. We do feel that sampling of the liquid is in order to determine if a significant quantity of oil from the motors may be getting into the storm sewers. This will be done immediately and corrective action will be taken if there is a significant problem.

Item IV.a.2.d. relating to chromate discharges will be corrected if and when the central clarification system is installed. As you know, routine sampling in the Scioto River at the discharge of the blow-down line indicated excessive hexavalent chromium. At Station 11, sampling data still shows hexavalent chromium to be less than 0.0.5 ppm.

Item IV.a.3.b. regarding the steam plant, shows that all emissions are in control except SO_2. We plan to budget for the low sulfur coal in FY-1974.

Item IV.a.3.d., Environmental Monitoring - does require a reevaluation of our current sampling procedure which is presently being done. We are satisfied that the analytical technique is adequately sensitive to distinguish between 1-1.5 ppb. A significantly improved sample will be received when the permanent air monitoring stations are installed. The engineering is completed for this project and they will be in operation by March 1, 1972.

Item f.1, page 12, relating to personnel monitoring, has been slightly misinterpreted. The statement in paragraph 2, page 13, is not completely correct in that no new personnel were found to have greater than one-half body burden of uranium when integrated over the entire year. The two employees referred to as on restriction due to an incident in 1965 continue to indicate more than one-half body burden of uranium.

Item V, page 14, relating to noise is being handled according to the recommendations. With the receipt of the new sound level survey equipment, plans are being made to resurvey plant areas where noise levels are considered in excess of OSHA standards. This survey is approximately 30 to 35% completed at this time.

A partial survey has been made in the X-705 oxide conversion facility to determine the necessary controls to lower the impact levels. Corrective action will consist of engineering alterations to the facilities or administrative controls such as limited time in the area or noise protective equipment.

Item VI, page 15, Lasers and Microwave Devices - the standard operation procedure as issued by the using department has been reviewed. A copy of the procedure is available as necessary. Further study of the procedure and communications with the laser eye protection goggle manufacturer indicated usage of different goggles, and they have been ordered. As an additional precaution, the involved personnel undergo routine ophthalmological examinations.

Item VII, page 15, regarding the testing of HEPA filters has been under review for quite some time. Our plans are to train an engineer from Process Engineering to conduct in-place testing of these filters. We enrolled a man in the Harvard School of Public Health, Department of Environmental Health Sciences, Filter Workshop, in September, 1971. He could not attend since the class was full, and he will be rescheduled in January or February, 1972 for this specialized training.

J. J. Eyre, Superintendent
Human Resources & Environment Control

JJE:jde

cc: L. E. Fuller
H. B. Lehman
R. B. Boeye
~~R. W. Brown~~ & D. ALTHOUSE
V. S. Emler

COMMENTS ON HEALTH PROTECTION APPRAISAL - GAT - NOVEMBER, 1971

III.B.9 Rad Effluent Reduction

The recommendation was made to install a stack sampler at the X-744-G storage and sampling warehouse. An engineering order was submitted on 12/3/71 to install this sampler. The order also included a sampler for X-344 facility.

JJE
12/28/71

COMMENTS ON HEALTH PROTECTION APPRAISAL - GAT - NOVEMBER, 1971

III.B.1 Material Handling Operations

Repackaging continues as broken or deteriorated bottles are discovered. Consideration is being given to processing the UNH to U_3O_8 if Y-12 does not intend to call forth material at a greater rate than they have to date. The "plastic bottle-UNH" problem is being reviewed, see letter to R. V. Anderson (GAT-511 71-104).

III.B.2 X-744-H Warehouse

We recognize the appraisal team's concern for combustibles in storage areas containing fissile materials. However, we feel it is unfair to be critical of practices which are, as yet, not approved criteria. Other materials of classified nature contained in the weathered cardboard boxes are the property of the Stores Department. When appropriate storage space is found, the material can be removed from X-744-H. It is odd that no comment was made about a similar condition in X-744-G.

V.J.DeVito
12/28/71

COMMENTS ON HEALTH PROTECTION APPRAISAL - GAT - NOVEMBER, 1971

III.A.2 The first rough draft of the development memo concerning use of the Tails Withdrawal System at assays to 5% has been prepared. The aim of the memo is to prove that nuclear safety is not dependent on positive separation of the two withdrawal systems by such means as double blocking valves, breaking lines, or buffering valves. Two computer problems have been solved, and results are encouraging; six additional problems remain to be solved. The work should be completed and a report issued by March 1, 1972.

III.B.6 It was determined that the only suitable source of information for the use and maintenance of HEPA type air filters was from a short course offered by the School of Public Health at Harvard University. An unsuccessful attempt was made to enroll a man in the course offered during the summer of 1971. GAT is on the waiting list for the next course offering, tentatively planned for 1972 (January or June).

F. E. Woltz
12/28/71

III.A.3 X-746 Contamination

Floor contamination problem has been minimized. In addition, a request has been made to Plant Engineering to install adequate floor covering or provide means which would further minimize contamination. One suggestion was removal of floor tile and buff concrete floor and cover with latex or vinyl paint.

Contamination control for visitors will include monitoring of the visitor prior to leaving the building.

A point ventilation system exists at each sampling location. Flexible metal tubing is directed at each disconnect point. A review will be made of procedures and equipment to determine their adequacy.

VJD
12/28/71

COMMENTS ON HEALTH PROTECTION APPRAISAL - GAT - NOVEMBER, 1971

III.B.3 Nuclear Safety Consultants

As stated in the subject paragraph, the Emergency Planning Staff did recommend "that the total absence of emergency procedure signs would provide the most safety for GAT employees."

From a time standpoint of before and during the emergency, procedure signs are not necessary, and if the currently acceptable plant philosophy, i.e., "At the sounding of the criticality evacuation alarm, all personnel must rapidly leave the building through the nearest exit," is to continue, such signs would only serve to alter the intent. This is listed as the first reason for rejection of signs, with others following:

1. Because of criticality, no designated routes are wanted.

2. Procedure signs become too complicated to read and comprehend in a short time.

3. All employees are not capable of associating words with sounds.

4. The number of signs required to properly inform under all conditions is prohibitive. This is because the population density is so low at this plant that, to cover all notification contingencies, the number of installation locations becomes excessive.

5. With time, permanently installed signs invite little or no attention.

6. The ability to fund an extensive sign installation program at this time is questionable.

7. Signs are not a substitute for discipline. Require, without exception, that all employees memorize plantsite building evacuation signals.

Further, the same paragraph of the subject report seems to generally agree with the above, but continues to hold out for improved marking of cascade building exits.

It is agreed that this aspect might be given further consideration; however, it is felt that realistic conditions simulating a fire in the cascade would indicate that any exit sign would prove useless. Occupants in heavy smoke caused by a lubricating oil fire and wearing proper mask protection would be unable to see any sign, lighted or iridescent, large or small.

J. R. Shoemaker
12/28/71

GOODYEAR

Goodyear Atomic Corporation

P.O. Box 628
Piketon, Ohio 45661

A SUBSIDIARY OF THE GOODYEAR TIRE & RUBBER COMPANY
ACTING UNDER U. S. ATOMIC ENERGY COMMISSION CONTRACT AT-(33-2)-1

TELEPHONE: PIKETON, OHIO AREA CODE 614-289-2331 TWX: 614-340-0800 TELEGRAMS: WUX-PIKETON, OHIO

DEC 1971

GAT-511-71-104

U. S. Atomic Energy Commission
Piketon, Ohio 45661

Attention: Mr. R. V. Anderson
Manager, Portsmouth Area

Subject: DURABILITY OF PLASTIC CONTAINERS IN STORAGE

Gentlemen:

This letter is in response to your inquiries made with regard to the durability of plastic storage containers for UNH. Examination of the 1710 UNH containers presently in storage shows 107 have been repackaged after an average of 16 months storage. It should be noted that these 107 were restricted to material returns of only 553 containers and of these 107 failures 11 occurred in a storage period of 6 months or less. This group of failures indicates that either the processor's material or the containers was of poorer quality than most of the returns which have been stored in excess of two years with no failures. The cause of the container failures has not been determined. Container manufacturers have recommended heavier wall thickness and several other material types (polymethylene and polypropylene).

In response to the manufacturer's suggestions, containers with wall thicknesses of approximately 0.133 inches are being purchased, for trial, at a cost of $1.75/container. These containers are three to four times the thickness of those presently in storage. Containers of polypropylene and polymethylene are also to be purchased, for trial, at costs of $2.00/container and $3.00/container, respectively. These costs can be compared to the $5.00/container repackaging cost (excluding overhead and decontamination costs). While there is a high degree of probability that thicker walled containers may extend the average storage life beyond two years, several additional factors must be considered in reaching

a conclusion with the limited data available at the present time. Currently the returns received at GAT are being hermetically sealed in polyethylene bags. There has been limited success with this application, however a continual observation for cracking is still required. Normal processing of future UNH scrap receipts should occur within the average span of container failure (1 - 2 years) except for material above 95 weight percent uranium-235 held for Y-12 processing. Present failure trends indicate batch or lot dependence as well as time dependence, thus suggesting a varying quality either in UNH product or container. With this variability the container failure rate could approach 100 percent in as short a period as six months.

In view of this we recommend the removal of the contract waiver on UNH as an acceptable material form to be returned for credit. This would benefit all concerned as we believe decreased transportation, recovery, and packaging costs would be realized almost immediately by the processor and it would eliminate the UNH storage problems. If the AEC does not wish to eliminate the waiver at this time, we recommend that the licensees be required to return material in containers with a minimum wall thickness of 0.15 inch which should extend storage periods until the material can be processed satisfactorily. Implementation of either recommendation or possibly on an option basis to the processors would alleviate the long term problems of storing UNH crystals.

If any additional information would aid in this evaluation, please let us know.

Very truly yours,

GOODYEAR ATOMIC CORPORATION

Original Signed by
C. D. TABOR

C. D. Tabor
General Manager

RJS:lmt

cc: R. W. Brown
V. J. DeVito

L. E. Fuller
H. Watts

GOODYEAR

Goodyear Atomic Corporation
P.O. Box 628
Piketon, Ohio 45661

A SUBSIDIARY OF THE GOODYEAR TIRE & RUBBER COMPANY
ACTING UNDER U. S. ATOMIC ENERGY COMMISSION CONTRACT AT-(33-2)-1

TELEPHONE: PIKETON, OHIO AREA CODE 614-289-2331 TWX: 614-340-0800 TELEGRAMS: WUX-PIKETON, OHIO

GAT-210-70-14
Refer to: O:ERS

U. S. Atomic Energy Commission
Piketon, Ohio 45661

Attention: Mr. R. V. Anderson
Manager, Portsmouth Area

Subject: APPRAISAL OF GOODYEAR'S OCCUPATIONAL MEDICAL (OM) PROGRAM

Gentlemen:

The subject report by Dr. Doran has been reviewed. A few inaccuracies are noted, including figures on plant population (November, 1959 - 2284; November, 1969 - 1350), details of physical examination programs (such as the eighth word in the second paragraph on page 6 should be exempt, the first word in the third paragraph on page 6 should read non-exempt and the total non-exempt should read 274), underlying causes of increased absenteeism, and condition of certain equipment. Since no recommendations are made they need not be discussed, except to say that increases in absences have been due to factors such as the 1969 flu epidemic and the aging plant population rather than the change in Workmen's Compensation regulations. Possible increases in lost-time injuries due to the new regulation are being dealt with on a preventative basis by the medical director. Diathermy listed as inoperable is merely obsolescent. However, it will be replaced. On page 4 it should be noted that the Industrial Hygiene Laboratory is supervised by Frank Voss, not Mr. Boggs.

An employment offer has been given and accepted by William J. Fleming, M.D., a Phi Beta Kappa, AOA graduate from Stanford, 1945. Dr. Fleming, a board certified internist, currently lives in the Portsmouth area and will report for work as soon as his "Q" clearance is obtained.

Management and the medical director are taking under advisement the suggestion of sending members of the nursing staff to professional meetings on a rotational basis. Plans are under way to schedule nurses and fire captains for the Emergency Care Courses offered by the American Academy of Orthopedic Surgeons. Present training is considered adequate for the counseling required. Except for routine work of this nature that arises in the course of nursing duties, the medical director prefers to take care of counseling services personally.

Absentee records in comparison with similar age and geographical groups are excellent. The medical director maintains a file on all sickness absences and has an established rapport with supervision for handling problem cases. With a second physician additional surveillance on these matters can be realized.

In an operation of the size of Goodyear Atomic it is a simple matter to keep key medical and health physics personnel well versed in their emergency duties. However, written procedures are advisable and those previously written as given to Dr. Doran will be updated. Documentation of arrangements for transfer to the Ohio State University Medical Center should be completed in the near future. Copies of prepared procedures and arrangements will be forwarded when completed.

Very truly yours,

GOODYEAR ATOMIC CORPORATION

G. H. Reynolds
General Manager

HBL:hg

cc: G. H. Reynolds ✓ HBL F-F
L. E. Fuller
H. B. Lehman, M.D.

UNITED STATES
ATOMIC ENERGY COMMISSION
PORTSMOUTH AREA OFFICE
PIKETON, OHIO 45661

MAR 3 1970

Goodyear Atomic Corporation
Piketon, Ohio

Attention: Mr. G. H. Reynolds, General Manager

Subject: APPRAISAL OF GOODYEAR'S OCCUPATIONAL MEDICAL (OM) PROGRAM

Gentlemen:

Attached are copies of the subject appraisal report prepared by Dr. W. T. Doran as follow-up to his visit here during the period October 27-29, 1969.

Please review the report and furnish us by March 27, 1970 your comments with regard to the report content and your detailed plans for implementing or otherwise handling the recommendations.

For your planning purposes, the Health and Nuclear Safety staff, ORO, will be resuming their periodic review of medical program information much as they did during initial health protection reviews in 1961. This will be carried out simultaneously with their regularly scheduled on-site appraisals of other health and nuclear safety programs.

Very truly yours,

Original Signed By
R. V. ANDERSON
Area Manager

R. V. Anderson
Manager, Portsmouth Area

Enclosure:
Medical Appraisal Report (2 cys)

M:JRN

GOODYEAR
Goodyear Atomic Corporation
P.O. Box 628
Piketon, Ohio 45661

A SUBSIDIARY OF THE GOODYEAR TIRE & RUBBER COMPANY
ACTING UNDER U. S. ATOMIC ENERGY COMMISSION CONTRACT AT-(33-2)-1

TELEPHONE: PIKETON, OHIO AREA CODE 614-289-2331 TWX: 614-340-0800 TELEGRAMS: WUX-PIKETON, OHIO

FEB 2 1972

GAT-232-72-6

U. S. Atomic Energy Commission
Piketon, Ohio 45661

Attention: Mr. R. V. Anderson
Manager, Portsmouth Area

Subject: ANNUAL HEALTH PROTECTION APPRAISAL, 1971

Gentlemen:

The formal report on the Health Protection Appraisal conducted by the ORO Safety and Environmental Control Division during November 1971 has been reviewed, and the following comments are offered in reply. The organization and nomenclature employed in their report will be used here to permit easy identification of the portions of the report dealt with in these comments.

Section III.B.3. offered nine recommendations by the appraisal committee. Since each of those recommendations deals with a portion of their "Findings" (IV), comments made here will deal specifically with the findings, but at the same time will serve as a response to the recommendations.

IV.A.2.a. Scheduling of construction projects has changed somewhat. The system for removing settleable and suspended solids from clarifier sludges and filter backwash water from the water treatment plant should be completed near the end of November 1972; and work on the X-701B holding pond should be completed about November 1, 1972. The central liquid-waste disposal facility (a $1.1 million line-item project initially proposed for FY 1973) presently is planned for FY 1974. It has been included as a portion of the long-range budget plans for FY 1974 and will be incorporated in the FY 1974 annual budget.

IV.A.2.b. The neutralization basin serving the HF storage area was flooded with rain water because of a plugged drain. The fault has been corrected; the basin has been drained and is now operating properly.

IV.A.2.c. Two liquid-waste management practices in the X-720 shop area have been resolved. Motor parts are cleaned with hot detergent solution (detergent GSA #7930-990-7391, low sudsing, synthetic built, type 11, MFD, July 1971, manufactured

APPROVED FOR RELEASE BY:
M. M. Karnhardt

by Washington Chemical Sales), and approximately 500 gallons of the solution are discharged into the storm sewer during an average month. One-gallon samples of the effluent liquid have been analyzed for oil; the average concentration of oil in four samples was 681 milligrams per liter, and the concentration ranged from 528 milligrams per liter to 792 milligrams per liter.

The effluent from the paint spray booth is not discharged directly into storm sewers. Instead, the water is permitted to separate from the paint dregs before discharge, and the dregs are shoveled into drums for later disposal.

IV.A.3.b. (Recommendation No. 8) Provisions for the use of low sulfur coal have been included in the long-range budget plans for FY 1974; the increase in annual cost will be about $200,000, as stated.

IV.A.3.d. (Recommendation No. 7) Sampling and analytical procedures for measuring fluorides in ambient air have been reviewed. Sampling error presently is being assessed; analytical error is approximately 6%, and limit of sensitivity is 0.3 ppb. As stated in the "Findings," the anticipated limit is 1 ppb (or 9×10^{-4} mg/M^3) fluoride in ambient air, averaged over 30 days. Data collected at GAT between June and November 1971 show an average concentration of fluoride in the ambient air of 7.6×10^{-4} mg/M^3.

Completion of the continuous, offsite, air-monitoring stations is expected April 15, 1972.

IV.B. (Recommendation No. 9) Stack samplers will be furnished for measuring radioactivity effluent from the X-744G and the X-344 buildings; both projects presently are in Engineering.

Sampling of sewage plant effluent for radioactivity and measurement of the flow rates will be started. Also, equipment will be furnished for measuring flow of laundry effluent (actual measurements will be made on water input) and for sampling of the effluent.

IV.B.1. (Recommendation No. 3) The GAT Emergency Planning Staff has concluded that neither routing signs nor exit signs will be needed for the process buildings. Since the most probable hazard would be a lube oil fire, during which signs would likely not be visible, the most practical safety system will be proper training of employees; they will be taught to go away from fires until they reach a building wall, thence along the wall until they reach a building exit.

IV.E.2. (Recommendations No. 1 and No. 2) GAT is continuing to repackage broken or deteriorated plastic bottles containing UNH crystals while two corrective measures are being explored: (1) Since most of the material in the bottles is being held for

Y-12, GAT will consult with Y-12 to learn whether they will call for the material at a greater rate; if not, GAT will consider reprocessing the UNH to U_3O_8. (2) Other types and other designs of plastic bottles will be investigated and tested. The problem and the approach to a solution are described in a letter to PMA-AEC (letter to R. V. Anderson, GAT-511-71-104).

Combustible materials will no longer be stored in warehouses where fissile materials are stored. Likely, the fissile materials will be transferred from X-744H to X-744G or X-746.

IV. F. 2. Contamination problems in the X-746 building will be solved by (1) applying a monolithic vinyl floor and (2) applying administrative controls that will include monitoring of offsite visitors before they leave the building. In addition, a review will be made of the placement and adequacy of point ventilation systems; both procedures and equipment will be reviewed.

IV. F. 5. (Recommendation No. 4) Noise level surveys will be conducted in all suspect areas, including all process areas, shops, laboratories, and the garage; other areas will be surveyed at random. The survey presently is about 50% complete.

The sound level survey in the X-705 oxide-conversion facility has been completed. Corrective actions will be taken in the form of administrative controls, e.g., use of protective equipment.

IV. F. 6. (Recommendation No. 5) The department operating the laser at GAT has prepared and made available a standard operating procedure. A review of the procedure and communication with a goggle manufacturer led GAT to conclude that different goggles should be employed; these have been ordered. As an additional precaution, personnel working with the laser undergo routine eye examinations.

IV. F. 7. (Recommendation No. 6) HEPA filters will continue to be used at GAT. In order to assure proper in-place testing of the filters, an engineer will attend the next filter workshop to be conducted by the Department of Environmental Health Sciences, Harvard School of Public Health.

We were favorably impressed with the professional manner in which the appraisal team conducted their survey. They were well prepared and went about their work quickly and efficiently.

Very truly yours,

GOODYEAR ATOMIC CORPORATION
Original Signed by
C. D. TABOR

C. D. Tabor
General Manager

VSE:sc

cc: R. W. Brown
V. S. Emler
J. J. Eyre
L. E. Fuller
N. H. Hurt
B. Kalmon
R. M. Rutherford
H. Watts

APPROVED FOR RELEASE BY
W. M. Barnhardt

Ans by c/s LEF - trans.
RWB
NNH
RMB
HW

UNITED STATES
ATOMIC ENERGY COMMISSION
PORTSMOUTH AREA OFFICE
PIKETON, OHIO 45661

JAN 11 1972

Goodyear Atomic Corporation
ATTN: Mr. C. D. Tabor, General Manager
Piketon, Ohio 45661

Gentlemen:

ANNUAL HEALTH PROTECTION APPRAISAL - 1971

We are forwarding herewith five copies of the formal report of the appraisal conducted by the ORO Safety and Environmental Control Division during the period November 2-4, 1971.

We are pleased to note that the report reflects continued safe operation of the Portsmouth facilities. We would appreciate your review of the report and implementation of the matters covered by the recommendations unless there exist sound reasons why the recommendations are not warranted in whole or part. In this regard, there are two recommendations on which we offer the following comments.

Recommendation 1. Corrective actions should be taken by GAT to process or repackage UNH where breakage of the plastic bottles is a problem. The test program suggested in recommendation 1 has already been initiated and we will work directly with you on the additional information needed.

Recommendation 8. This recommendation is not to be considered as a decision by the AEC in the problem of low sulphur coal vs. SO_2 removal equipment as identified in your Long Range Plan on pages 14 and 16. We have no objection to the planning for low sulphur coal but believe this may be no more than a short-term solution.

We would appreciate your comments with regard to the conduct of the review, content of the report, and detailed plans for implementing or otherwise handling the recommendations by February 4.

Very truly yours,

Original Signed By
R. V. Anderson
Area Manager

R. V. Anderson
Manager, Portsmouth Area

Enclosure:
Subject rpt (5 cys)

M:ERS

HEALTH PROTECTION APPRAISAL

GOODYEAR ATOMIC CORPORATION

BY

WILLIAM A. PRYOR AND THOMAS M. JELINEK
HEALTH AND NUCLEAR SAFETY BRANCH

AND

JEROME F. WING
WASTE MANAGEMENT & POLLUTION CONTROL BRANCH

NOVEMBER 1971

I. Purpose and Scope

The annual appraisal of the Goodyear Atomic Corporation, Portsmouth Gaseous Diffusion Plant, Portsmouth, Ohio, in the programs of health and nuclear safety and waste management and pollution control was conducted by representatives of the ORO Safety and Environmental Control Division on November 2-4, 1971. The appraisers were T. M. Jelinek and W. A. Pryor of the Health and Nuclear Safety Branch, and J. F. Wing of the Waste Management and Pollution Control Branch.

II. Summary

The GAT health protection and environmental control programs continue at a satisfactory level. Nine recommendations for improvement of specific programs are presented.

III. Recommendations

A. Implementation of 1970 Recommendations

1. Recommendation in regard to strengthening administrative controls X-744G to assure that UNH bottles could not fall into geometrically unsafe mop buckets.

   Action: Administrative controls include restricting the bucket to the aisle centers during which time no containers of uranium will be moved.

2. Recommendation in regard to a safety analysis of the tails withdrawal system.

   Action: The safety analysis of the tails withdrawal area is underway. Since this is a comprehensive study, which involves computer calculations of many case situations, the final report will be reviewed by ORO prior to final acceptance of the corrective action.

3. Appropriate action be taken to determine the source(s) of contamination in the X-746 sampling area.

   Action: The sources of contamination have been identified. The area has been made a mandatory shoe cover area, and modifications have been made in operating procedures to reduce the levels of contamination. However, GAT should consider taking additional action as suggested in Section IV F.2.

4. A survey should be made of the new microwave diathermy unit to determine the beam intensity as a function of the unit's power level and distance from the antenna.

   Action: The recommended survey was performed by the Public Health Service. Results indicate no particular problem with the unit, but cautioned against possible eye damage when the unit is used at full power for upper back and lower neck treatment. Operating procedures for this unit have been modified to satisfactorily limit eye exposure.

B. Recommendations of the 1971 Appraisal

The appraisal committee recommends that GAT:

1. Review the UNH storage bottle failure problem in X-744G and take appropriate action for early processing and/or repackaging to minimize current nuclear safety and health physics problems associated with these failures. A minimal test program to determine the optimum storage bottles for long term UNH storage should also be initiated. (See Section IV E.2.)

2. Minimize combustibles in fissile storage areas. (See Section IV E.2.)

3. In lieu of marking evacuation routes in the cascade buildings, as recommended by the Nuclear Safety consultants, improve upon the identify of the exits through the use of iridescent paints, etc. (See Section IV E.1.)

4. A comprehensive noise level survey be performed plant-wide, results suitably documented, and correction or protection measures be initiated as required. (See Section IV F.5.)

5. A review be performed of the laser safety practices in use at the plant-site. (See Section IV F.6.)

6. The use of HEPA filters be reviewed; those required for health protection be identified and tested in-place. (See Section IV F.7.)

7. Re-evaluate the adequacy of the sampling and analytical procedures used to determine the concentration of fluorides in the ambient air. (See Section IV A.3.d.)

8. Due to the potential impact of proposed State air pollution regulations concerning sulfur oxides, the long range plan should include funds necessary to acquire low sulfur coal. (See Section IV A.3.b.)

9. Proceed with the implementation of the sampling activities associated with the rad effluent reduction program. (See Section IV B.)

IV. Findings

A. Environmental Pollution

1. Organization

In mid-February 1971 GAT management formed the Environmental Control Committee to coordinate the planning, budgeting, and implementation of pollution abatement programs. Originally the committee was chaired by J. J. Eyre, Superintendent, Equal Opportunity Activities, with representatives from the Production, Technical, Engineering and Industrial Relations Divisions. The organization was realigned in June with V. S. Emler, Supervisor, Environmental Control, as chairman reporting to C. D. Tabor, General Manager, through Mr. Eyre. The initial efforts of the committee have been directed toward a technical assessment of GAT's potential pollution sources and coordination with the technical and engineering staffs on problem solving. Their progress has been excellent and the committee should prove to be a valuable asset to GAT management.

2. Liquid Waste Management

a. Construction Projects

Subsequent to the November 4, 1970, appraisal visit by FWQA (now EPA) and State of Ohio representatives, GAT has made good progress toward implementing the recommendations contained in the June 22, 1971, EPA report. A project to provide post-chlorination of the sewage plant effluent, which was recommended by the FWQA but was budgeted prior to their visit, was completed during the week of December 15, 1971, ($35,500). Although the bulk of the water treatment plant sludge originally was piped to one of four sludge lagoons, it occasionally was necessary to discharge a small fraction

to a nearby surface drainage ditch leading eventually to Little Beaver Creek. The engineering on a project to divert this fraction to the lagoon system is 80% completed and project completion is scheduled for February 15, 1972 ($27,500).

As part of the rad effluent reduction program, an inventory of onsite generation and release points indicated that about 90% of the uranium discharged annually via liquid streams could be precipitated and retained in the X-701-B Holding Pond (about 76 Kg in 1969) by providing equipment to appropriately adjust the pH. The engineering on this project is about 60% completed and project completion is scheduled for May 31, 1972 ($55,000).

The $1.1 million line item project which was proposed for FY 1973 to reduce chromate discharges has been postponed by AEC until at least FY 1974.

b. Diking

Controls for accidental releases of bulk stored chemicals are excellent. Two 10,000 gallon concentrated sulfuric acid tanks are cement diked with about four feet of limestone over a clay base which has a French drain with normally closed valve leading to the storm sewer and then to Little Beaver Creek. The liquid level in the tanks is checked twice each shift. The roofed and moderately enclosed HF storage area contains three tanks and is cement diked with a one-tank capacity. The dike has a gravity drain to a limestone-filled neutralization basin. The tanks are tested ultrasonically on a three year interval, one tank each year. Routinely, one tank is usually full, one in use, and one is always empty. A capability exists to transfer from one tank to another. The neutralization basin was filled with rain water apparently due to an unintentional plug in the drain. GAT personnel indicated the plug would be cleared and the basin drained.

Another, apparently dry, limestone neutralization basin nearby receives HF scrubber liquor and occasional discharges of electrolyte from the fluorine generators.

c. Shop Area

A review of liquid waste management practices in the X-720 Shop Area resulted in no serious problems; however, one relatively small pollution source should be evaluated to see if there may be a reasonably inexpensive solution which may be applied. The effluent from the electric motor cleaning operation containing an organic solvent is also discharged to the storm sewer. Although no information was readily available to quantify the discharge and thereby assess the seriousness, it may be possible, depending upon the characteristics of the solvent, to collect the water-solvent mixture, separate it in a simple gravity separatory process, discard the water, and reuse the solvent. The paint spray booth water curtain consisting of about 600 gallons is discharged to the storm sewer system about twice each year. It is understood that an emulsifier is used which allows the paint dregs to be separated prior to discharge.

d. Chromate Discharges

The blowdown volume currently varies between 50,000-100,000 gallons per day and monitoring data continue to demonstrate that 0.05 ppm hexavalent chromium is not exceeded in the Scioto River after a modest zone of mixing. This practice is permissible under the existing Ohio water quality standards; however, a recommendation resulting from the November 1970 FWQA (EPA) visit calls for the pipeline effluent to meet the Ohio River Valley Water Sanitation Commission (ORSANCO) limit of 0.05 ppm. This was appealed and subsequent to this ORO appraisal visit, the response from the Chicago EPA office said we should plan to meet the Ohio standards; however, if it was evident that Ohio was planning to apply the ORSANCO chromium effluent limit to the Scioto River in the foreseeable future, abatement equipment should be designed on that basis. ORO will resolve this question with appropriate Ohio representatives.

The blowdown volume is essentially a function of the number of reconcentration cycles and the MW level. On July 1, 1971, the power level increased from 500 MW to 700 MW and is scheduled to be 1000 MW on December 1, 1971. The blowdown volume, river flow, and resulting chromate concentrations in the

Scioto should be followed carefully as possible empirical indicators of the potential effect at future power levels.

The effluent from Station 11 was routinely less than 0.05 ppm hexavalent chromium during the past year. Previously excursions above 0.05 ppm were observed; however, improved administrative control appears to have corrected this.

3. Air Pollution

a. Incineration

The replacement of two non-compliant incineration operations with a single compliant incinerator was completed in June 1971 ($46,434), and this brings GAT into full accord with the existing state and Federal regulations on open burning and incineration.

b. Steam Plant

Particulate emissions from the steam plant were resampled February 23-25 and March 3, 1971, and found to be in compliance with 42 CFR 76 (0.17 and 0.18 lbs/million Btu versus the limit of 0.4 lbs/million Btu). These results compare favorably with tests made on February 9-10, 1970 (0.17 and 0.19 lbs/million Btu). The smoke detectors and recorders, installed in October 1969, are calibrated in Ringlemann units with the calibration checked monthly by the Instrument Shop. Emissions of sulfur oxides were sampled March 25, 1971, when 3.1% sulfur coal was being burned. The stack concentration was 1,320 ppm by volume SO_2 and 2 ppm SO_3. Due to the location of the Portsmouth Gaseous Diffusion Plant, the only fuel reasonably available is Ohio strip mine coal which typically contains 3-4% sulfur; however, outplant air samples continue to indicate compliance with the national ambient air quality standard for SO_2.

The air pollution abatement regulations expected to be adopted by Ohio and approved by EPA include the provision for official monitoring stations to be installed in air quality control regions. The number of stations to be installed is a function of the contaminant in question and the population density.

In a predominantly rural region it is possible that only one SO_2 monitor would be used and that it would be located in the area of the highest population density. The proposed regulations require that in the event data from this station show the ambient air quality standard for SO_2 is being exceeded, all fuel burning facilities in the region would be required to reduce SO_2 emissions. Since a change to higher fuel quality such as gas or No. 2 fuel oil are not "live" options at GAT and there is no backup alternate fuel, it is recommended that funds be included in the long range budget for low sulfur coal beginning with FY 1974. Currently it is estimated that 1.25% sulfur coal would range between $13.25-$13.50 per ton as compared with $8.10 per ton for about 3.5% sulfur coal. Based on an annual consumption of 40,000 tons, the increased fuel cost would be about $200,000 per year.

c. Process Emissions

A more detailed classified inventory of fluorine and NO_x emissions at current and projected power levels was prepared September 9, 1971, and discusses possible reduction actions applicable to the various sources. A pilot plant operation is underway to study fluoride disposal techniques using caustic scrubbing. Process emission control planning is currently being coordinated through the ORO Environmental Pollution Control Task Force which also assures an information exchange between applicable ORO facilities.

d. Environmental Monitoring

Data for fluorides at PORT indicate ambient air concentrations which usually exceed the anticipated limit of 1 ppb averaged over 30 days while data from PAD and ORGDP usually indicate dependable compliance. While it is possible that this difference is valid, it may be possible that the difference could be due either to the manner by which the raw data are assembled, i.e., lumping on and offsite data together; by variations inherent in using grab sample data; or perhaps the sampling or analytical procedure is too insensitive at these very low concentrations, i.e., sample length perhaps too short. It is recommended that GAT re-evaluate the adequacy of the current sampling and analytical technique and data

treatment used to determine the concentration of fluorides in the ambient offsite air. A project to provide five continuous offsite air monitoring stations is scheduled for completion March 1, 1972 ($19,000). The engineering is about 50% completed and arrangements have been made with the county for the necessary easements. The ability to collect a longer sample at fixed offsite locations will aid in improving the sensitivity of the air monitoring data.

B. Rad Effluent Reduction

In response to a request to evaluate measures which might be taken to reduce the discharges of radioactivity to the environment, although already in compliance with existing regulations, GAT summarized the CY 1970 effluent releases in GAT-R-575 dated June 28, 1971. The data and recommendations contained therein were informally discussed with PORT and GAT staffs prior to this visit and in detail at this time. ORO previously had concurred in the recommendation to install a pH adjustment capability at the X-701B Holding Pond and now concurs with the recommendation to install a stack sampler at the X-744G storage and sampling warehouse in order to better quantify the release of radioactivity. It may be possible to borrow a spare sampler from the FMPC. ORO also concurs in the recommendation to monitor the laundry effluent for radioactivity. Additionally, the sewage plant effluent should be monitored for radioactivity. Since the laundry effluent flow is estimated, it may be necessary to measure the flow, at least temporarily, to better quantify this source. Follow-up should be done to explore and verify the unexpected releases indicated in Big Run and the West Drainage Creek (Points L-1 and L-2 in the reference document).

C. Pest Control Programs

A review of pesticide and herbicide use, storage, and personnel training found all facets to be satisfactory. Only registered materials are used and of the planned programs require reporting to the President's Working Group on Pesticides. Thus far, two of the staff members have attended the PHS course at the CDC in Atlanta. The knowledge gained there is used to guide their choices and use of pesticides and herbicides as well as to guide the applicators in safe practices.

D. Timber Harvesting

A tour was made of the timber harvesting operation being conducted in nine areas totaling 156 acres of mature forest in the PORT buffer zone. The areas were first reviewed by professional foresters who recommended clear cutting and supplied the guidelines being used by the logging contractors. Periodic visits are made to the logging areas by AEC and GAT personnel to monitor compliance with these guides and, when necessary, directions for remedial measures are provided to the loggers. Only minor erosion was noted in one logging road, and the loggers had already been directed to correct it. Cooperation has been excellent to date, and the logging is about 35% completed. Following completion, the roads providing access to these areas will probably be left intact for whatever incidental or emergency use may be required.

E. Nuclear Safety

1. Nuclear Safety Consultants

At the request of GAT management, particular attention was directed to the recommendation made by the Nuclear Safety Consultants Committee in October 1970 regarding the marking of evacuation routes in the cascade buildings. The GAT Emergency Planning staff had disagreed with the consultants' recommendation primarily due to the minimal number of personnel in the cascade buildings and due to the enormous size of these buildings.

The reviewer visited the cascade operating floors to observe present conditions. There would be essentially no gain in an extensive marking of evacuation routes. However, there would be merit in improving the identification of building exits through the use of iridescent paint, etc., which would meet the intent of the consultants' recommendation.

2. Material Handling Operations

As previously noted in the 1970 appraisal, the failure rate of the plastic bottles containing highly enriched UNH crystals, which have been returned from licensees under scrap recovery contracts in storage in the X-744G warehouse appears to be

accelerating. During the tour of this warehouse, approximately ten new bottle failures, which released material to storage shelves and to the floor, were observed by the appraiser. Numerous other bottles which had failed earlier had been placed in the polyethylene bags. Due to current requirements for UF_6 feed to the cascade, this material will probably remain in storage for some extended period of time rather than being immediately processed to UF_6.

Other action which could be taken to minimize the nuclear safety and health physics problems would include repackaging. However, since returns from scrap recovery contracts are continuing, the optimum action appears to be convert the UNH to a form which would be more compatible with long term storage. U3O8, which is acceptable to GAT, would appear to be the most optimum form. This was recommended to the ORO Production Division.

The X-744-H warehouse is used as a storage area for VHE and HE UF_6 in 5" ID cylinders. Other materials of a classified nature, which are also stored here, are contained in weathered cardboard boxes. Such combustibles should be removed from fissile materials storage areas. Proposed criteria for these storage areas preclude the presence of combustibles.

3. Significant Incidents

One significant incident occurred during the report period and involved an accumulation of UO_2F_2 in the 8" diameter freon degrader, located in X-25-7. The accumulation was discovered through a survey with the neutron probe. An investigation was initiated, and the committee recommended replacement with a nuclearly safe 5" diameter reactor. Until the change could be completed, the reactor is being checked with the neutron probe once per shift.

4. Feed Vaporization

As a result of earlier studies, Raschig rings made of Polyvynaldichloride and dry boric acid have been placed in the X-342 steam vaporizers to serve as neutron absorbers in event of a release from feed cylinders containing slightly

enriched UF_6. An ANS standard for use of these Raschig rings is being developed. A nuclearly safe solution collection system has also been installed along with improved leak detectors.

5. Technical Studies

GAT is studying the effect of concrete reflection on cylinders of highly enriched UF_6. A series of critical experiments for verification of results has been proposed. Due to facility construction requirements for fissile material storage, which will be implemented in the near future, these technical studies should be completed.

C. Transportation Safety

1. Offsite Shipments

Radioactive materials shipped from Portsmouth consist primarily of enriched UF_6 to domestic and foreign customers. The material is shipped in customer-owned protective packages. Other materials shipped include scrap in DOT Specification 6L and 6M containers.

All offsite containers are inspected by GAT prior to shipment, and minor defects are corrected. However, containers having been damaged significantly are not used, and the customer is so informed. One such protective package was observed by the appraiser. This particular protective package had been involved in overseas service and was received at Portsmouth in a damaged condition. It was appropriately tagged pending a decision of the customer.

The following DOT Special Permits, the containers involved, and the material shipped are in use at Portsmouth:

DOT SP	Container	Material
4909	Family of UF_6 cylinders in protective packages	UF_6 at any enrichment
5663	5" ID UF_6 cylinders in United Nuclear Corp. protective package	UF_6 at any enrichment

DOT SP	Container	Material
5765	Vermiculite Container	Solid uranium at any enrichment
6553	10-ton UF_6 cylinder in protective package	UF_6 up to 1.5% enrichment

2. Onsite Shipments

Onsite shipments of radioactive material fall into three categories: (1) UF_6, (2) solutions, and (3) other solids, i.e., UNH, uranium oxide, etc. UF_6 is transported as follows:

10 or 14-ton cylinders - singly on strattlebuggy
30" diameter cylinder - singly on forklift
8" and 12" diameter cylinders - in dollies by truck
5" diameter cylinder - in dollies by truck and in a specially designed cart (up to 24 cylinders)

solutions and other solids such as UNH, oxides, etc. are transported as follows:

Twelve position carts and "bread board" (boards with spaced cylindrical holders) which is positioned on a truck.

F. Health Physics and Industrial Hygiene

1. Personnel Monitoring

Personnel radiation exposure is monitored through a well balanced program of film badging, bioassay, and in vivo lung counting. Approximately 400 film badges are processed quarterly, these badges being assigned to personnel with the greatest exposure potential. All employees identification badges contain film for use in accident evaluation. In addition to the regular 400 badges processed, about 100 other film badges are selected at random and processed quarterly to substantiate the low exposure of other personnel. Also, about fifteen film badges are placed in specific areas of the plant and processed quarterly as an indication of maximum exposure potential. All external radiation exposures in the last year have been well below the guidelines of AECM-0524.

The frequency of bioassay varies from weekly to semiannually. Approximately 25 GAT employees are on a weekly schedule. Bioassay records indicate that six employees have been placed on work restrictions due to exceeding the plant action level on uranium in the urine.

The IVRML was at GAT in July 1971. No additional personnel were found to have greater than one-half body burden of uranium. Two GAT employees continue on work restriction as a result of an incident in 1965; these employees have 0.6 and 0.7 body burdens of uranium. One employee placed on work restriction last year was whole body counted at Y-12. Results indicated a body burden of 39 micrograms uranium, compared to 206 micrograms as determined with the IVRML; the work restriction was removed. No explanation of the initial high count has been determined.

The personnel monitoring program is considered satisfactory.

2. X-746 Sampling Facility

Contamination control has been a continual problem in the 746 sampling facility. Sources of contamination have been identified and modifications have been made to operating procedures to minimize contamination. However, residual contamination in and under the asbestos tile floor covering, and occasional equipment failure or operator error have made it necessary to make the area a mandatory shoe cover area. GAT is hopeful of relocating this facility in the future. However, since this area will continue in use for some time, and visitors are allowed in the facility, it is suggested that the following actions be taken: (1) the old tile floor covering be removed and replaced with a more suitable material, or the base concrete floor be cleaned and painted, (2) visitors be monitored for contamination prior to leaving the facility, and (3) the location of point ventilation systems (such as at the pigtail to cylinder connection) be reviewed for proper placement.

Operators of the sampling facility are on a weekly bioassay schedule. No serious inhalation problems have been noticed for some time. This correlates well with the appreciable reduction

in airborne contamination. Contamination surveys and subsequent decontamination of the facility have been satisfactory. It is noted that the contamination is not readily dispersible since adjacent areas have been found relatively free of contamination. Supervision of the facility is to be commended for its continued attention to the problem.

3. Radiation Sources

Sealed sources are inventoried and leak checked semiannually. Records are maintained indicating source location, strength, and leak check results.

There are six X-ray machines on the plant site. Industrial Hygiene and Health Physics Department reviews and approves each X-ray installation operation. Changes in the operation must be re-approved by the department. Control and operation of these devices appear to be satisfactory.

4. Instrument Calibration

The GAT Instrument Maintenance group is responsible for maintaining and calibrating all radiation detection instruments. Portable alpha survey meters are calibrated monthly. Maintenance and calibration of other portable and permanent instrumentation is done at least quarterly. All instruments are calibrated at the highest range practical. Instruments which are intended for emergency type monitoring are calibrated up to 5 R/hr by the IH&HP Department. All instruments are tagged indicating the due date for the next calibration.

The instrument calibration program is considered to be satisfactory.

5. Noise

GAT has recently purchased new sound level survey instruments. Several areas of the plant site have been surveyed and two areas found where sound levels were in excess of OSHA standards. Both of these areas were corrected by engineering design. Currently, there are no areas within the plant where ear protection is considered mandatory. During a walk through the

oxide conversion facility (X-705), high background noise levels as well as very loud impact noises were noted. GAT is encouraged to perform detailed noise surveys in this area, as well as plant-wide.

6. Lasers and Microwave Devices

There is one laser at the GAT plant which is currently in use. IH&HP Department has never reviewed the operation for compliance with suggested laser safety practices. ORO urges that this be accomplished.

There are no non-medical microwave devices currently in use at GAT.

7. HEPA Filters

A brief review of the use of HEPA filters in the X-705 facility was conducted. Varying enrichments of U-235 are handled in this facility. It appears that some HEPA filters are required for accountability purposes, while others are required for health protection reasons. Although most systems have stack monitors beyond the filters and differential pressure manometers across the filters, neither method is satisfactory to assure that the required filter efficiency is maintained. It was suggested during this appraisal that the use of HEPA filters be reviewed on the plant site, that those HEPA filters required for health protection purposes be identified, and that a method for in-place testing of those filters required for health protection be developed.

G. Occupational Medicine

The occupational medicine program at GAT continues to be satisfactory. Staffing in the medical department has been reduced by one clerk, but this should have little effect on the overall medical program. Other staffing, physical examination frequency, audiometric examinations, etc. continue as discussed in last year's appraisal.

The microwave diathermy unit has been surveyed by the Public Health Service. Several recommendations relative to the operation of the unit were made by the surveyor. These recommendations have been implemented by the medical staff.

GAT intends to purchase new audiometric equipment in the near future. Meanwhile, the present equipment is calibrated at the plant site (in addition to a manufacturer's calibration every two years) utilizing equipment recently purchased by the Industrial Hygiene and Health Physics Department. The operator of the audiometric equipment has recently become certified by the State of Ohio.

The GAT medical staff is keenly aware of the appropriateness of providing consultation and advice to employees for off-the-job medical problems. The medical staff spends a considerable portion of its time in such consultations with employees and supervision. Topics of concern in the past have been alcoholism, absenteeism, and job satisfaction. Drugs have apparently not been a significant problem at the plant site.

The Medical Division's capabilities for handling radioactively contaminated patients were reviewed. Considering the low probability of a serious accident involving contamination and the relative low radiotoxicity of the contaminants, facilities appear to be adequate.

The Medical Director is in the process of holding discussions with a local hospital concerning the treatment and handling of contaminated patients. It was pointed out by the Medical Director that no person contaminated with radioactive materials has ever been sent to an offsite hospital.

Reviewers: W. A. Johnson for
William A. Pryor
Health & Nuclear Safety Branch

Thomas M. Jelinek
Health & Nuclear Safety Branch

J. F. Wing
Jerome F. Wing, Chief
Waste Management & Pollution
Control Branch

Ans → LFZ (2) 12/15
GDA
RWB
RBB

UNITED STATES
ATOMIC ENERGY COMMISSION
OAK RIDGE OPERATIONS
P.O. BOX E
OAK RIDGE, TENNESSEE 37830

AREA CODE 615
TELEPHONE 483-8611

November 8, 1972

Goodyear Atomic Corporation
ATTN: Mr. C. D. Tabor
General Manager
Post Office Box 628
Piketon, Ohio 45661

Gentlemen:

ANNUAL HEALTH PROTECTION APPRAISAL OF GAT, 1972

The annual health protection appraisal of GAT was conducted on September 26-28, 1972, by members of the ORO Safety and Environmental Control Division. The findings were informally discussed with AEC and GAT representatives at that time.

Enclosed are six copies of the formal report of the appraisal. You may proceed with implementation of the recommendations unless there are sound reasons why they are not warranted. In any event, your comments with regard to the conduct of the appraisal, the general content of the report, and the detailed plans for implementing or otherwise handling the recommendations are requested by December 20, 1972.

The cooperation extended by members of your staff during the appraisal is appreciated.

Sincerely,

Charles A. Keller
Charles A. Keller, Director
Uranium Enrichment Division

OSH:RDS

Enclosure:
Appraisal Report (6 cys)

cc w/encl:
R. V. Anderson, PORT
J. H. Hill, AMO, OR
W. O. Mickelson, O&P, OR
W. H. Travis, Safety, OR

LEF →

Comments by 11-1 ?

Wiley Johnson 4113

RVA

We have no disagreements with facts as presented nor with interpretations to our responses during S. + P. questions of the appraisal visit.

11/3/72

Fuller – we could quibble over some items but I feel we can handle this when formal report comes.

Kalmon – Can find nothing major to disagree with – in fact feels recommendations are good.

Comments by 11/1 → LEF

HEALTH PROTECTION APPRAISAL

GOODYEAR ATOMIC CORPORATION

September 1972

by

RICHARD D. SMITH

ROBERT W. POE

I. Purpose and Scope

The annual health protection appraisal of GAT was conducted on September 26-28, 1972, by members of the Health Protection Branch, ORO Safety and Environmental Control Division. The appraisal covered areas of health physics and industrial hygiene.

II. Summary

GAT continues to have an adequate health protection program. Four recommendations are offered for improvement in the program.

III. Recommendations

A. Implementation of the 1971 Recommendations

1. A comprehensive noise level survey be performed plantwide, results suitable documented, and correction or protection measures be initiated as required.

   The survey has been completed, but additional attention is necessary toward personnel protection.

2. A review be performed of the laser safety practices in use at the plant site.

   This recommendation has been adequately implemented.

3. The use of HEPA filters be reviewed; those required for health protection be identified and tested in-place.

   Filter use has been reviewed but in-place testing has not been completed.

B. Recommendations Resulting from this Appraisal

It is recommended that:

1. An active program be established by the Industrial Hygiene and Health Physics Department aimed at evaluating the adequacy of the local and laboratory hood exhaust systems to provide the personnel protection necessary from the hazards associated with the operations involved. (See Section IV-B)

2. High noise level areas be posted as such along with protective equipment requirements and time limitations; engineering solutions to reduce the noise levels in these areas should be considered. (See Section IV-C)

3. Form AEC-9 be posted in accordance with AECM-0525. (See Section IV-G)

4. Appropriate measures be taken to assure that health physics instrumentation be recalibrated and serviced in accordance with the plant procedure. (See Section IV-K)

IV. Findings

A. Staff

The staff remains the same in number as in previous years. However, the industrial hygienist has left GAT and has been replaced with a young man recently graduated from Rensselaer Polytechnic Institute with a Masters Degree in Physics. He will assume the responsibilities of the industrial hygienist. At this time, GAT's industrial hygiene program is in a static condition because of the training needed by the new man. It is hoped that his training will proceed with timeliness and completeness so that he can provide the technical evaluations needed for industrial hygiene problems at the plant.

B. Ventilation

Ventilation problems in Building 710 were looked at in order to ascertain the progress toward upgrading the system to meet OSHA standards. From an engineering standpoint, progress appears to be underway; i.e., GAT has established a face velocity standard for hoods at 100 ft/min, and 150 ft/min for more hazardous material; the face velocities for each hood has been measured and the systems have been balanced and many hood bypass openings have been closed up in order to maximize the present system. Fan motors have been increased to one HP on two hoods resulting in an increase in the face velocity to about 100 ft/min. Cost estimates are presently being made to change all the fan motors to one HP. GAT's basic attack is the one recommended by J. Little in his report for upgrading the laboratory hood ventilation system.

For the interim period until the hoods are upgraded, there has been no safety guidance given to the operators concerning the use of hoods with adequate flow for operations involving more toxic materials. Operators on their own are not using hoods with little or no flow. Problems arise, however, when hoods have marginal flow for the operation intended.

Other plant ventilation systems used for exhausting fumes from various operations such as degreasing, paint spraying, and welding have admittedly not been receiving adequate attention. While reviewing some survey reports, it was noted that an air sample of a degreasing operation showed an airborne concentration of Trichloroethylene in excess (approximately 1.5 times) of the TLV. We were informed that the airborne concentration in this area was dependent on the position of the outside doors. The survey report made no indication that supervision was informed of the problem (the reviewers were informed that supervision was verbally informed) and there was no followup air sample.

It is, therefore, recommended that the IH&HP Department develop an active program aimed at evaluating the adequacy of the local and laboratory hood exhaust systems to provide the personnel protection necessary from the hazards associated with the operations involved.

C. Noise

A noise survey of GAT operations has been accomplished with the findings documented. In areas where the levels exceeded 90 dBA, the area supervision was informed along with recommendations concerning personnel protective measures necessary for the areas. While touring GAT, it was observed that for the most part areas with high noise levels have not been posted. It is, therefore, recommended that identified areas with high noise levels be posted to that effect and specify protective equipment necessary and/or time limitations and that engineering controls to reduce noise levels be considered in these areas.

D. Heat Stress

One survey has been performed in the suspected worst location on site; a condenser platform in X-333. The survey reviewed, based upon ACGIH guides, that employees could only work in the area 25% of the time and must rest 75% of the time. With

the imminent adoption of heat stress criteria by OSHA, it would behoove GAT to scope in on the magnitude of this problem with additional surveys of suspect areas, and establish administrative controls and procedures to comply with the standard once it is issued.

E. HEPA Filters

The use of HEPA filters has been reviewed and there are none in use solely for health protection purpose but are combined with accountability. However, the three locations where these filters are installed in part for health protection purposes are in the process of being tested by an engineer newly trained in the technique of DOP testing. Filters for the product sampling station in Building 326 have been tested and failed; modifications have been requested. The other two locations, X-705 oxide conversion and the incinerator, have yet to be tested. The appraisers were assured they would be tested in the near future.

F. X-746-G

Contamination control in the sampling area appears to have improved slightly in recent months, but it still needs considerable improvement since outside visitors frequent this area to observe the sampling of their material. A new vinyl floor has been installed (4 ft sheets cemented to the concrete base floor) which has eased the decontamination effort. This floor was installed in June and, since that time in the immediate sampling area, liquid nitrogen has attacked the floor causing the floor to crack and trichloroethylene has attacked the glue causing two sheets to come loose from the floor. The contamination problem comes from the sampling operation by two main mechanisms, operator error and equipment failure. Operator error can be explained in part, according to the area supervisors, by the fact that they have a large turnover rate in the operators. By the time a operator is trained he moves, by choice, to another job. Area supervision is making a definite effort to upgrade the training program, hopefully reducing the contribution of employee error to the contamination problem. ORO agrees that proper and adequate training is essential and gives its support to this project. However, we realize that this will not solve the total

problem of contamination but may reduce it to an acceptable level, depending upon the contribution of equipment failure, primarily valve leaks. If training efforts fail to solve the problem, then the only alternative appears to be enclosing the sampling operation.

G. Film Badge Program

The personnel monitoring program provides for approximately 400 employees film badges to be read quarterly. These badges are worn by the employees who have the greatest potential for exposure. An additional 100 badges, worn by employees not monitored for radiation exposure (those whose exposures have historically been less than 10% of AECM-0524 limits), are randomly selected and read each quarter. All exposures this year have been below those specified in AECM-0524.

During the second quarter of 1972, there was one exposure to an X-ray technician which exceeded the plant action limit. This exposure, 1.4 Rem, was assumed to be from X-rays since this was the form of radiation with which the employee worked. No exact determination of exposure could be made from the film since it is calibrated for beta and gamma radiation. Thus, the recorder exposure is conservative. The circumstances surrounding the exposure are not known since the employee had left the company before the film was developed. The exposure is believed to be false because the open window is outlined perfectly without shadows. Nevertheless, the exposure has been assigned to the individual.

Each year there is a plantwide change of jobs offered to union workers. After these changes are made, the film badge program is updated to reflect these changes. This is accomplished by writing letters requesting a list of employee job assignments and they are added or removed from the program as their job assignment dictates.

The IH&HP Department utilizes 15-16 film badges for area monitoring. The results from these badges indicate that these areas have radiation fields in excess of 2.5 mrem/hr. The employees working in these areas are on the film badge program. However, administrative controls over these areas can be managed better if these areas, 2.5 mrem/hr and greater, were posted as radiation areas.

One of the requirements of AECM-0525 is that Form AEC-9 be posted. This form explains to the employee the availability of his exposure history and other matter pertaining to standards for radiation protection. In the course of touring GAT, it was apparent that no forms were posted. Instead, AECM-0524 had been posted with instructions on how to obtain information. It is, therefore, recommended the Form AEC-9 be posted to comply with AECM-0525 and that the cover instructions on the posted manual chapter be removed.

H. Urinalysis Program

The specimens collected in the urinalysis program are analyzed for total uranium g/l, uranium d/m/alpha, fluorides or mercury depending on the employees potential for exposure to these elements or compounds. There have been no restrictions on employees work location as a result of the urinalysis program.

The number of employees having to submit recall sample varies from quarter to quarter. This last quarter, there were approximately 50 employees submitting recall samples. There seems to be a correlation between the number of employees submitting recall samples and the number of employees found with contaminated hands during spot checks. It is felt that personal decontamination hygiene and the wearing of protective equipment should be re-emphasized to employees.

I. Sealed Sources

The IH&HP Department maintains an inventory of all sealed sources on site. The department also investigates the use and general purpose of the source and makes recommendations for safe handling of the source. Another function of the department is to leak test sealed sources every six months. Most of the sources are wiped if the containers are accessible. However, there are a few sources on site which cannot be wiped and no other leak test is made.

Source records maintained by the department indicate the source type, strength (in curies), location, user, and leak condition. These records have been put into a standard form with the information already entered as to the integrity or accessibility of the source. There is no indication of what the count rate was as of the last check. Information on the count rate of leak tests is of value in accessing marginally leaking sources. It is suggested that information pertaining to integrity be removed from the form and that the count rate for each source be maintained as part of the record.

Leak tests during the past year indicated that no source has loss its integrity. Sources found, in the past, to be leaking have been disposed of by burial.

J. Lasers

The laser safety practices have been reviewed and a operating procedure has been written. There are two lasers on site, one 60 megawatt pulsed and one 10 milliwatt continuous. The lasers are not currently in use, but an experiment is planned for the 60 megawatt laser next year.

Currently, there are three laser operators. They will use protective glasses and will have periodic eye examinations when operations start up again. The eye examination will be provided by a doctor in Portsmouth and will have a Fundus photograph taken as part of the exam.

K. Instrumentation

Health physics instrumentation is maintained by the Instrument Maintenance Group. Instruments serviced and calibrated by this group are tagged in accordance with the operating procedure with a return date. However, during the appraisal, there were several instruments in the possession of operating personnel which had not been returned by the due date. It is recommended that appropropriate measures be taken to assure that these instruments are recalibrated in accordance with plant procedures.

Reviewers:

Richard D. Smith
Health Physicist

Robert W. Poe
Health Physicist

9/29/72

LET
by RWB
10/10 GDA

HEALTH PROTECTION APPRAISAL

The following are observations of the Health Protection Appraisal conducted by R. D. Smith and R. W. Poe, with the Health Physics Department, during the week of September 25, 1972. Although this is a tentative report, these are the areas in which corrective action is necessary.

1. Increased attention be given to the orientation and reorientation of plant personnel concerning the proper use of protective equipment when handling contaminated materials and equipment.

2. The recommendation (1971 appraisal) concerning the evaluation of the noise problem has been satisfactorily carried out. However, the areas found to have noise levels in excess of those recommended by OSHA should be posted as to ear protection and/or time limit requirements.

3. In accordance with AECM 0525, AEC Form 9 should be posted.

4. Areas which have radiation fields of 2.5 mRem/hr or greater should be posted as Radiation Areas.

5. The Industrial Hygiene and Health Physics Department should begin evaluating the continued adequacy of ventilation systems, local and laboratory hood exhaust, to insure that the systems provide the protection for which they were designed.

6. Measures should be taken to insure the recalibration of radiation instruments in accordance with plant procedures.

R. D. Smith
Health Physicist

R. W. Poe
Health Physicist

cc: R. V. Anderson
C. D. Tabor
B. Kalmon
W. H. Travis

PE 7
RBB

UNITED STATES
ATOMIC ENERGY COMMISSION
OAK RIDGE OPERATIONS
P.O. BOX E
OAK RIDGE, TENNESSEE 37830

AREA CODE 615
TELEPHONE 483-8611

September 7, 1972

Goodyear Atomic Corporation
ATTN: Mr. C. D. Tabor
General Manager
Post Office Box 628
Piketon, Ohio 45661

Gentlemen:

ANNUAL HEALTH PHYSICS AND INDUSTRIAL HYGIENE APPRAISAL OF GAT, 1972

The annual health physics and industrial hygiene appraisal will be conducted September 26-29, 1972, as informally arranged with Mr. Ben Kalmon. The reviewers will be Messrs. Richard D. Smith and Robert W. Poe.

The appraisal will cover areas of health physics and industrial hygiene with special attention to the latter.

Sincerely,

Charles A. Keller
Charles A. Keller, Director
Uranium Enrichment Division

OSH:RWP

cc: R. V. Anderson, PORT
J. H. Hill
W. H. Travis

GOODYEAR ATOMIC CORPORATION
P. O. BOX 628
PIKETON, OHIO [illegible]
PHONE: [illegible]

OCT 23 1972

GAT-232-72-54

U. S. Atomic Energy Commission
ATTN: Mr. C. A. Keller, Director
Uranium Enrichment Division
Oak Ridge Operations
Post Office Box E
Oak Ridge, Tennessee 37830

Gentlemen:

VENTILATION IN BUILDING X-710

The following information is being furnished to allay the concern expressed in your letter of October 11, 1972. During the time that the X-710 ventilation system is being upgraded, interim administrative controls will be employed to assure that only those hoods that are safe for specific applications will be used for those applications.

The face velocities of all the hoods in the X-710 building have been measured, with the hood sashes in the fully open position. Based upon those velocities, the hoods have been divided into four classifications: Class 1, face velocities greater than 130 fpm; Class 2, face velocities between 80 and 130 fpm; Class 3, face velocities between 50 and 80 fpm; and Class 4, face velocities less than 50 fpm. The use of each hood will be governed by its classification; and the materials that may be used in that hood are identified by their threshold limit value (TLV). Materials having TLV less than 0.1 ppm may be used in Class 1 hoods only. Materials having TLV between 0.1 and 100 ppm may be used in Class 2 or Class 1 hoods. Materials having TLV greater than 100 ppm may be used in Classes 3, 2, and 1. Class 4 hoods may be used only for non-hazardous materials and only after the use of the hood has received supervisional approval.

The administrative procedures and controls to be employed are these:

(1) A sign stating the classification of each hood will be affixed to the hood sash door.

(2) Every person who works in the laboratory will be furnished a list of materials that may be used in hoods of each classification; these lists will show the TLV. When an employee wishes to use material not shown on the list, he must first obtain permission from his supervision.

(3) These lists and instructions will be given to each person working in the laboratory during meetings specifically intended for dissemination of this information.

(4) Maintenance personnel may not work on any of the hoods without a repair order, which must be initiated by Plant Engineering and coordinated by Laboratory Services. The repair order will state--and the Laboratory Services representative will reiterate--any health or safety hazards that might attend the maintenance work.

Implementation of these procedures has been started and will be completed before October 27.

There are some hoods in the laboratory in which perchloric acid is used. Signs will be attached to those hoods stating that they should not be used for materials other than perchloric acid, except as specifically approved, in writing, by the laboratory supervision.

Laboratory Services personnel will perform hood velocity surveys every three months to determine adequacy of the hood exhaust systems. Records will be maintained for each hood, showing the date of inspection, name of the inspector, the hood classification, and the average face velocity measured when the sash is fully open.

Very truly yours,

GOODYEAR ATOMIC CORPORATION
Original Signed by
C. D. TABOR

C. D. Tabor
General Manager

VSE:sc

cc: R. V. Anderson
J. H. Hill
W. H. Travis
L. E. Fuller
G. D. Althouse
R. W. Brown

UNITED STATES
ATOMIC ENERGY COMMISSION
OAK RIDGE OPERATIONS
P.O. BOX E
OAK RIDGE, TENNESSEE 37830

AREA CODE 615
TELEPHONE 483-8611

OCT 11 1972

Goodyear Atomic Corporation
ATTN: Mr. C. D. Tabor
General Manager
Post Office Box 628
Piketon, Ohio 45661

Gentlemen:

VENTILATION IN BUILDING X-710

During the recent health protection appraisal of GAT, it was noted that Engineering is busy studying the ventilation problems associated with Building X-710. Air bypasses to the hood ventilation systems have been blocked in many cases in order to maximize the face velocities, and measurements of the face velocities of all the hoods have been taken. GAT appears to be making progress toward the eventual upgrading of the system. For the interim period, however, there appears to be no administrative controls governing the use of hoods with inadequate or marginal flow. Therefore, re-emphasizing our position as stated in my letter dated July 11, 1972, GAT is to establish administrative controls over the use of hoods to ensure that only hoods with adequate flows are used for projects which could possibly present a health hazard. Details concerning GAT's implementation of this request should be forwarded to this office by October 24, 1972.

Your cooperation in this matter is appreciated.

Sincerely,

ORIGINAL SIGNED BY
Russell E. Lead

Charles A. Keller, Director
Uranium Enrichment Division

OSH:RDS

cc: R. V. Anderson, PORT
J. H. Hill, AMO, OR
W. H. Travis, Safety, OR

GOODYEAR ATOMIC CORPORATION

P. O. BOX 628
PIKETON, OHIO 45661

PHONE: 614-289-2331

DEC 14 1972

GAT-212-72-222

U. S. Atomic Energy Commission
ATTN: Mr. C. A. Keller, Director
Uranium Enrichment Division
Oak Ridge Operations
P. O. Box E
Oak Ridge, TN 37830

Gentlemen:

ANNUAL HEALTH PROTECTION APPRAISAL OF GAT, 1972

The formal report on the Health Protection Appraisal conducted by the ORO Safety and Environmental Control Division during September, 1972 has been reviewed and the following comments are presented. The order and nomenclature used in the report is followed in this reply.

Section III - Recommendations

Part A-3. The in-place testing of HEPA filters is continuing.

Part B-1. The progress of the laboratory hood exhaust systems was reported in detail to you in my letter of October 23, 1972.

Part B-2. The types and numbers of signs required to be posted in high noise level areas are being studied. In accordance with OSHA regulations there is nothing specific about requiring such signs. The major problem is in the large areas of the process buildings which are in excess of the eight-hour continuous working day limit. Engineering solutions are not readily available without requiring a major expenditure of funds.

Another problem is that of intermittent noises associated with non-repetitive operations carried on in large open areas of the shops facility.

Part B-3. Form AEC-9 has been posted on all bulletin boards. The sheet removed as requested in Section IV-G was identical with Form AEC-9.

Part B-4. A procedure is being developed in cooperation with Instrument Maintenance to assure that health physics instruments are returned to the Instrument Maintenance Department for recalibration and service as required.

M. E. Barnard

Section II - Findings

Part A - Staff
The recently hired graduate to assume the duties of the Industrial Hygienist is scheduled for training sessions at NIOSH and the American Safety Congress. His first training class is scheduled to begin on December 4. This is the earliest session in which he could be enrolled.

Part B - Ventillation
See Section III - Recommendations, Part B-1. The procedures and controls proposed in the letter of October 23 are essentially completed and are in effect.

Part C - Noise
See Section III - Recommendations, Part B-2.

Part D - Heat Stress
A four-plant committee has been formed to make extensive heat stress studies of possible methods for meeting the proposed OSHA criteria. Extensive wet-bulb globe temperature profile measurements are being planned. The gaseous diffusion plants have prepared a budget and plan proposal in a "Short-Form Data Sheet," which will soon be submitted to the Commission for approval. The preliminary cost estimate for CAT is $7,300,000.

Part E - HEPA Filters
The in-place testing program has not been completed to date.

Part F - X-740
Minor modifications are to be made to the sampling and evacuation equipment to further minimize contamination resulting from disconnects.

Extensive modification or changes to the system are not warranted since the X-740 operations will be transferred to X-344 in 1974. New sampling devices and manifolding are contemplated for the operations at that time.

Part G - Film Badge Program
Signs will be posted in areas where the radiation fields exceed 2.5 mrem/hr. Appropriate signs have been ordered.

Part H - Urinalysis Program
CAT has repeatedly emphasized the wearing of the proper protective clothing and equipment. We have recently experienced considerable job-changing due to realignment and the apprentice training program. Supervision has been instructed to re-emphasize to all their employees the necessity of wearing protective clothing and equipment. This will be done as part of the routine safety meetings.

Part I - Sealed Sources
Reference is made that the count rate of each sealed source should be indicated to assess marginally leaking sources. It is implied from the report that there is some leakage - no leakage has been detected. However, future

inventories will indicate this information along with the surveyor's initials. It is further inferred in the report that leaking sources found in the past have been disposed of by burial. This leads one to believe that leaking sources have been found. All sources buried to date have been of no further use either due to changing requirements or have decayed to a level too low to be useful.

Part J - Lasers
No comment.

Part K - Instrumentation
See Recommendations, Part B-4.

Very truly yours,

GOODYEAR ATOMIC CORPORATION

C. D. Tabor
General Manager

BK:hg

cc R. V. Anderson
✓C. D. Tabor
L. E. Fuller
H. B. Lehman
B. Kalmon

GOODYEAR ATOMIC CORPORATION

P. O. BOX 628
PIKETON, OHIO 45661

PHONE: 614-289-2331

U. S. Atomic Energy Commission
ATTN: Mr. C. A. Keller, Director
Uranium Enrichment Division
Oak Ridge Operations
P. O. Box E
Oak Ridge, TN 37830

Gentlemen:

MID-YEAR HEALTH-PROTECTION APPRAISAL

The formal report on the mid-year health-protection appraisal conducted by the ORO Health Protection Branch during February 1973 has been reviewed. We are pleased that the "observed deficiencies" have been brought to our attention while they are still only potential problems--while they are still in an early stage where correction is relatively easy. Even under the best industrial hygiene and health physics programs there are problems; only when those problems are brought to light can appropriate effort be applied to solve them.

We agree that "an aggressive, responsible, and introspective program" is needed; we agree that the impact of OSHA, of environmental regulations, and of the capacity expansion programs magnify the need for that program; and we also agree that the attitude of the management organization plays a large role in determining whether or not a program is effective. Therefore, we are taking the steps necessary to insure that the needed impetus will be provided by our management organization. My letter to responsible GAT management documents that stand, as the following excerpts demonstrate.

> "I believe it imperative that we take positive action to correct not only the specific deficiencies but also the more basic shortcomings of which these specifics are symptomatic.
>
> ". . . Your report may very well include significant departures from our present organizational responsibilities and authorities or procedural practices. If so, they will be given full consideration for it is absolutely essential that we have a highly improved and effective health protection program for our employees.
>
> "By copy of this letter I am requesting every division manager to cooperate fully in correcting every deficiency listed in his area of responsibility."

APPROVED [illegible] BY:
M. M. Earnhardt

In response to that letter the division managers have documented their plans to assess and correct all the "Findings" noted in the appraisal report. The managers also have documented their instructions given to area supervisors to assure complete cooperation with the organizational units responsible for our industrial hygiene and health physics program.

In reply to the recommendations made in your appraisal report, we offer the attached tabulation of comments. The format employed in the appraisal report is used in this response to permit easy identification of specific recommendations.

Since the appraisal "Findings" are generally covered in the "Recommendations," they will not be addressed individually and specifically in this response. Please be assured, however, that they are being addressed both individually and specifically by our management organization, both verbally and in well documented internal correspondence.

Very truly yours,

GOODYEAR ATOMIC CORPORATION

Original Signed by
C. D. TABOR

C. D. Tabor
General Manager

VSE:HBL:sc

Attachment

cc: R. V. Anderson (PMA)
Division Managers
H. B. Lehman
V. S. Emler
B. Kalmon
S. H. Hulett

COMMENTS ON APPRAISAL RECOMMENDATIONS

A. The management of Goodyear Atomic Corporation is assuring itself that its "health protection program is meaningful, dynamic, and supported by area supervision." The General Manager has delineated the responsibilities of the management organization (see excerpt in cover letter).

In addition, the Industrial Relations Division has been reorganized, bringing together the responsibilities for safety, health physics, and environmental control in a newly formed subdivision. This move places those allied functions in an organizational unit where they can receive the deserved emphasis; the responsibilities of the subdivision superintendent will not be diluted by non-related matters.

B. The Standard Operating Procedures for both the Industrial Hygiene and the Health Physics organizations currently are being upgraded. Importantly, and specifically, those procedures dealing with TLV limits are being modified to conform to the latest OSHA requirements. Additionally, the industrial hygienist has completed his analysis of a new industrial hygiene survey program, and that program now is being put into operation; written procedures implementing the new program will be prepared in the immediate future.

Standard Practice Procedures for the plant require that the Health Physics Department survey all excess scrap and equipment to determine whether or not it is contaminated. The Health Physics Department not only monitors the excess material and equipment, but furnishes certification that the contamination level does not exceed the public sale limits prescribed by the AEC. Where the contamination does exceed those prescribed limits, the material or equipment may be sold only under the provisions of Property Management Instructions, Section 109-45.50, "Excess and Surplus Radioactivity Contaminated Personal Property." These procedures also are being reviewed.

Before new facilities or processes are installed, or before old ones are modified, the effectuating engineering documents must be reviewed and approved by the Health Physics and Industrial Hygiene organizations. The Standard Operating Procedures governing this responsibility are being reviewed to enhance and insure compliance.

C. The current Industrial Hygiene and Health Physics auditing and surveillance programs are being modified to enhance their effectiveness. As suggested in the recommendations, the program will include evaluations of all potential work hazards, provisions for resolving problems and implementing solutions through the area supervision, and a definitive system designed to assure management awareness.

D. Under the new organizational arrangement, the industrial hygiene function is strengthened. Members of the organization now are free to exploit their contacts with other technologists in industry, in government, and in the academic community. The new arrangement will permit more concentrated and more extensive training of the new industrial hygienist to enhance his native abilities. Services of professional consultants will be employed as required.

E, G, & H. As noted in the cover letter, division managers have been instructed to take those steps necessary to implement these recommendations. The division managers, in turn, have documented their instructions to their line organizations. Unquestionably, members of area supervision are being "made keenly aware of Goodyear's philosophy toward safety" and are being "instructed to cooperate with health protection personnel." They are aware that they must adhere most strictly to operating specifications to assure that the health-protecting features of those specifications are not being compromised.

GAT currently has a program for safety training in the work areas (monthly safety meetings). This program normally emphasizes safety (conditions, equipment, etc.) and the worker's attitude toward safety. These monthly departmental safety meetings are being modified to include training and health protection as well as safety. The employees, through their area supervision, will be informed of the roles played by health physics and industrial hygiene personnel and will be shown how their cooperation with that program affects their own health and safety. Both the content of the meeting and the attendance will be documented.

F. Currently over 500 operating specifications are in use in the Production Division alone. These specifications are reviewed annually by Process Engineering, who recommend to Production supervision those specifications which should be reviewed for conformance with currently acceptable practices. As each of these specifications is reviewed in the future, greater than the usual attention will be paid to assure that these specifications provide for good safety and health-protection practices.

INTERDEPARTMENTAL CORRESPONDENCE

TO: L. E. Fuller, Manager
Industrial Relations Division

DEPT:

LOCATION:

DATE: March 28, 1973

FROM DEPT: 101

CODE NO:

REFERENCE:

SUBJECT: MIDYEAR HEALTH PROTECTION APPRAISAL

Attached is a copy of the official report of the midyear health protection appraisal conducted by Smith and Dufour, AEC-ORO, on February 5 to 16, 1973. A corporate response to this appraisal is due in Oak Ridge by April 16; therefore, I am requesting that you prepare this response for my signature by April 11.

On March 22, I transmitted a copy of the rough draft of this report to you, together with specific instructions for corrections and implementation of recommendations. The written report requested in the March 22 letter can be eliminated and your response to the official report substituted in its stead.

C. D. Tabor
General Manager

CDT:jr
Attachment

cc: R. B. Boeye, w/attch.

Copy of report and Keller's letter & Tabor's to Fuller to Rutherford 4-3-73 at his request

OFFICIAL USE ONLY

UNITED STATES
ATOMIC ENERGY COMMISSION
OAK RIDGE OPERATIONS
P.O. BOX E
OAK RIDGE, TENNESSEE 37830
AREA CODE 615
TELEPHONE 483-8611

March 23, 1973

Goodyear Atomic Corporation
ATTN: Mr. C. D. Tabor
General Manager
Post Office Box 628
Piketon, Ohio 45661

Gentlemen:

MIDYEAR HEALTH PROTECTION APPRAISAL

Enclosed are three copies of the report summarizing the midyear health protection appraisal conducted from February 5 to February 16, 1973.

Deficiencies noted in this report indicate that the program is inadequate to meet AEC requirements. We feel this situation warrants the personal attention of GAT's top management to determine if the present system is capable, with considerable reemphasis, of meeting GAT's needs or if a new approach to health protection is necessary. The annual health protection appraisal will be conducted sometime in September 1973, and it is expected that the reviewers will find at that time progress toward the development of a dynamic program. If our health protection staff can be of assistance to you in this matter, feel free to contact them directly. Detailed implementation plans for the recommendations listed in this report are requested by April 16, 1973.

Sincerely,

Charles A. Keller
Charles A. Keller, Director
Uranium Enrichment Division

OSH:RDS

Enclosure:
Appraisal Report (3 cys)

cc w/encl:
R. V. Anderson, PORT

OFFICIAL USE ONLY

OFFICIAL USE ONLY

HEALTH PROTECTION APPRAISAL

GOODYEAR ATOMIC CORPORATION

FEBRUARY 1973

BY

RICHARD D. SMITH

JAMES T. DUFOUR

OFFICIAL USE ONLY

I. Purpose and Scope

This appraisal was scheduled and conducted by Messrs. R. D. Smith and J. T. Dufour of the Health Protection Branch, Safety and Environmental Control Division, ORO, over a two-week period starting February 5 and ending on February 16, 1973. The primary areas of concern were the health physics and industrial hygiene practices and problems associated with buildings X-700, X-705, X-710, and X-720. The findings and recommendations were discussed in detail with GAT top management during their visit to Oak Ridge on March 2, 1973.

II. Summary

The GAT Industrial Hygiene & Health Physics Department is considered deficient with respect to conducting an aggressive, responsible and introspective program. It is fortuitous that serious problems have not emerged. Further, the advent of OSHA, CIP-CUP and outside environmental concerns require a dynamic integrated IH&HP program to meet AEC requirements. Attitudes of both staff and supervisory personnel are considered major contributing factors for the deficiencies. These attitudes have evolved slowly over the years and are perhaps the result of a lack of confidence on one or both sides, hesitant exercise of authority or responsibility, and general complacency due to the absence of reported serious occurrences.

The general observation above is derived not only from the recent special appraisal but from past appraisals which indicated trends and symptoms of a marginal IH&HP program.

Based upon recommendations and findings noted herein, it must be concluded that GAT's health protection program is inadequate to meet present and future needs. Future increases in activity and production could lead to serious health protection problems if this program is not upgraded in the near future to meet the standards required of an AEC-ORO prime contractor.

III. Recommendations

The following recommendations are offered to aid GAT management in establishing an IH&HP program commensurate with AEC requirements. It is recommended that:

A. GAT management establish a mechanism to assure itself that GAT's health protection program is meaningful, dynamic, and supported by area supervision. (See Section IV-A)

B. The standard operating procedures for the IH&HP Department be upgraded and expanded to include: specific procedures associated with an industrial hygiene program, a procedure for reviewing new or modified facilities or processes, and a procedure for the contamination survey of excessed scrap and equipment. (See Section IV-B)

C. The IH&HP Department establish an effective audit and surveillance program which includes (1) evaluation of potential hazards for all work locations, (2) recommendations for the resolution of problem areas and the implementation thereof in close liaison with area supervision, and (3) a record and reporting system which assures that unresolved problems are brought to the attention of top management. (See Section IV-B)

D. The services of an outside industrial hygiene consultant be obtained for the purpose of staff reorientation and to review the adequacy of existing hardware and analytical facilities. (See Section IV-B)

E. Area supervision be made keenly aware of GAT's philosophy toward safety and instructed to cooperate with health protection personnel. (See Section IV-C)

F. Operating specifications be reviewed, upgraded as necessary, and kept current including safety precautions and safety equipment necessary to conduct the operation. (See Section IV-C)

G. Area supervision demand strict adherence to operating specifications. (See Section IV-C)

H. Area supervision develop a training and retraining program for their employees to cover such areas as protective equipment, health physics, and industrial hygiene. Employees should be well informed of their role in plant safety, what is required of them, and the possible consequences both health-wise and disciplinary if plant safety and/or operating specifications are violated. The documentation of these programs should include an outline of each individual topic covered, employees present, and the instructor. (See Section IV-C)

IV. Findings

A. General

The findings of this appraisal were discussed in considerable detail at the critique. Although each of the deficiencies noted are singularly significant and require correction, they are more important as indicators of overall program deficiencies.

GAT's mechanism for identifying and eliminating health protection problems is two-fold. Problems are identified and recommended solutions are made by the IH&HP Department which is a staff service organization. The primary responsibility for employee safety and the implementation of IH&HP recommendations rests on area supervision. This is a workable and common approach to safety and is used by other ORO contractors. However, the attitudes of both entities toward their respective responsibility and authority appear to have become less attentive than that required for an effective health protection program. The following examples substantiate this conclusion:

1. Radiological Occurrences

There were about 300 radiological occurrence reports filed for the oxide conversion area during 1972. The primary occurrence was airborne activity exceeding the plant allowable level (PAL). The contamination levels recorded for each survey in the oxide conversion area of X-705 are always above the PAL, and in room 111, building X-710, they are above the PAL a good portion of the time. Employees working in these areas are generally showing an upward trend in their lung burdens of ^{235}U as measured by in vivo counting techniques and demonstrated by the fact that GAT has reported, for 1972, nine new employees with greater than 50% of a lung burden.

2. Oil Burning

The burning of waste oil next to building X-705 has been going on for about two years, and on one day during the appraisal, this operation was producing smoke which was picked up by the X-705 building supply ventilation. The smoke in the building had the odor of phosgene gas. Phosgene is produced by burning oil

contaminated with trichlorethylene. Surplus drums are apparently recycled without regard to proper cleaning or labeling controls. The need for critical evaluation of both the incinerator operation and drum reuse procedure is apparent.

3. Air Contaminants

The instrument decontamination shop in X-702 had uncomfortably high levels of ammonia in the air. In building X-700, trichlorethylene vapors exceeding the TLV existed in the pit under the trichlorethylene vapor degreaser. In each of the above situations area supervision and/or IH&HP knew of its existence and yet no determination of hazard potential was made; therefore, applicable corrective measures were not taken. Furthermore, GAT's upper management was unaware of these potentially hazardous situations.

B. Industrial Hygiene and Health Physics Department

One of the first projects to be undertaken by a new health protection division is the appropriate dissemination of current written policies and procedures under which this department will function. GAT issued such a document, Standard Operating Procedures for Department 212; however, it has not been adequately updated in several years. In most instances, there is no delegation of authority or responsibility for correcting noncompliance items. The procedure for industrial hygiene is inadequate in that no program is defined for the monitoring and evaluation of problem areas such as the use of toxic solvents and gases. Procedures are lacking for reviewing new or modified facilities, and the contamination survey and release of excess scrap and equipment. It is, therefore, recommended that the IH&HP Department SOP's be reviewed, upgraded, and expanded to include, among other things, those items mentioned above.

One of the primary functions of the IH&HP Department is to perform routine surveys throughout the plant in order to evaluate health protection problems. It became apparent during the appraisal that essentially no use is made of the radiation survey data such as correlation between data and personnel exposure. Subsequently, no action is taken other than recommending the decontamination of an area when it

exceeds the PAL. Further, some scheduled routine industrial hygiene surveys are made when operations of concern are shut down at time of sampling.

It was further observed that the director of the Medical Division is extremely busy conducting the occupational medical program for approximately 1,400 GAT employees. As a result, the IH&HP Department has essentially been left to function on its own with little guidance and management attention. Hence, the effectiveness of the IH&HP Department among area supervision is impaired.

The new GAT industrial hygienist appears to be very able and energetic and will, no doubt, be a great asset in the future. He is faced with upgrading the industrial hygiene program and establishing liaison with the analytical lab. Facets of the program include identifying problem areas, acquiring necessary hardware to conduct comprehensive surveys, and developing information sources and contacts with others in the field. Consequently, because of his recent arrival at GAT and his inexperience in industrial hygiene, it is felt that his development could best be served through the services of a consultant, perhaps an experienced professional industrial hygienist from the Goodyear corporate staff who could supply momentum to the health protection program.

C. Area Supervision

Area supervision is charged with the primary responsibility of employee safety. The effective discharge of this duty includes communication of safety philosophy, enforcement of safety procedures, and maintainance of a safe working environment. The implementation of recommendations of the IH&HP Department into local operating procedures is essential for a safety program to be meaningful to workers. It was determined during this appraisal that supervisory attention to the above has not been adequate. This observation is based on many observed and recorded practices in violation of established plant operating specifications.

Supervision in X-705 stated that employees tend to be production oriented and will sometimes take shortcuts to increase production. This is exemplified by the seven recorded cases of UF_6 releases from pig tails in the cold trap room, due probably to poor purge techniques, which resulted not only in high airborne activity but employees having to take time away

from the job to submit urine samples. This type of "shortcut" not only increases the employees exposure but reduces production by taking the man off the job. In addition, disconnecting pig tails from UF_6 cylinders without respiratory protection is in violation of Operating Specification CN 11.0-1.

It was noted that operating specifications are not kept current in any regular manner; some appeared out-of-date. Further, in some cases, verbal instructions replace written changes to operating specifications. Also, inconsistencies exist in the required protective equipment for similar operations. Under these circumstances, procedures are easily violated by employees and problems may not be recognized.

The following procedural deviations were noted:

1. Oxide is not vacuumed up promptly in the transfer room of the oxide conversion area.

2. Condenser heads were being painted with an epoxy without respiratory protection (this was corrected by GAT's industrial hygienist).

3. Gloves were removed from the glove ports in the oxide conversion tower room without isolating the areas.

4. Drums being filled with trichlorethylene and those already filled and in use in the plant did not have their old labels obliterated.

5. There were nine recorded instances during 1972 where maintenance was performed on equipment which had been exposed to process material without respiratory protection. These resulted in at least 30 employees having to submit urine samples, and in every case where the employees were identified at least one of the group had measurable amounts of alpha activity in the urine.

Reviewers: Richard D. Smith
Health Physicist

James T. Dufour
Industrial Hygienist

INTERDEPARTMENTAL CORRESPONDENCE

TO: L. E. Fuller, Manager
Industrial Relations Division

DEPT:

LOCATION:

DATE: March 22, 1973

FROM DEPT: 101

CODE NO:

REFERENCE:

SUBJECT: HEALTH PROTECTION APPRAISAL FINDINGS

Attached is a rough draft of findings by Smith and Dufour during their recent two-week in-depth appraisal of our health protection measures and practices, particularly in X-700, X-705, X-710, and X-720 areas. We have already discussed these observations with you and have expressed our deep concern about the situations and incidents that led to the conclusions offered in this report. I believe it imperative that we take positive action to correct not only the specific deficiencies but also the more basic shortcomings of which these specifics are symptomatic.

Accordingly, I am requesting a written report from you by April 11, responding to every observation, finding, conclusion, and recommendation in the appraisal draft. I expect these responses to be positive in nature and not defensive, but intended to make significant improvements in our health protection program. Your report may very well include significant departures from our present organizational responsibilities and authorities or procedural practices. If so, they will be given full consideration for it is absolutely essential that we have a highly improved and effective health protection program for our employees.

By copy of this letter I am requesting every division manager to cooperate fully in correcting every deficiency listed in his area of responsibility. If this cannot be accomplished immediately (prior to April 11), then definite plans to do so should be indicated. These actions and plans for action are to be included in your report to me.

Original Signed By
C. D. TABOR

C. D. Tabor
General Manager

CDT:jr
Attachment

cc: G. D. Althouse
R. B. Boeye
R. W. Brown
N. H. Hurt
R. J. Reed
R. M. Rutherford
H. Watts

The results of the extensive two-week appraisal of GAT health protection activities are outlined as follows. Significant observations and conclusions have resulted from this work.

Findings

X-700

1. Trichloroethylene filling station: drums being filled had multiple labels
2. Trichloroethylene vapors in the pit under the vapor degreaser were 100-125 ppm in the general area, and 300-400 by the tank. A painter (subcontractor) with no eye protection or respirator was working in the pit.
3. The area foreman did not know GAT's position concerning the safety requirements for subcontractors.
4. A dip tank labeled as containing ammonia actually contained water.

X-705

1. Waste oil is burned outside X-705; smoke picked up by building ventilation was blown into high bay area. The smoke contained noticeable levels of phosgene gas produced from trichlor in the oil. This has been operating for two years and may go to a manifold operation in the future.
2. The number of radiological occurrence reports in the oxide conversion area has increased. The monthly average was about 20 for the first 9 months of 1972, and in October, November, and December the number had increased to 46, 30, and 45, respectively. Essentially all were due to high air activity. The operations in the area during the last three months were: October production, November maintenance, December half and half.

a. Approximately 50% of the identifiable radiological occurrences from October-December are attributable to normal operations, i.e., sweeping the floor, changing filters, changing cylinders in the cold trap room and roding the calciner in "F" area. The rest are from leaks and maintenance.

b. In order to put the approximately 300 radiological occurrence reports for 1972 in perspective, it should be pointed out that each one had at least 2 high air samples and some had about 30 for a two or three-day period resulting from a leak. An area with this many high air samples could develop complacency in the employees. For example, on February 15, 1972, a series of activities resulted in a high air sample in the cold trap room constant air monitor. It was ignored. An air sample one hour later showed levels to be normal. Activities continued and a second high air level was recorded and 13 employees were sent for a Type III urinalysis.

3, The oxide conversion areas are always contaminated above PAL at time of the monthly survey.

4. A coffee pot was allowed to remain in the cold trap room and visible signs indicated that ~~snakes~~ snacks were consumed there.

5. Some maintenance work has been performed on systems which contained PG without respiratory protection.

Some of the 1972 instances follow:

11/30 maintenance work "E" area, 20 employees for urinalysis

11/7 cut into instrument line to surge tank, cold trap room

9/5 repaired diveter valve

8/16 replaced gasket oxide can "F" area calciner

6/8 cleaning and maintenance "F" area calciner

5/5 "B" area calciner gasket change, rod removed

4/17 change interometer seal; tower room

4/12 change south bank NaF traps; cold trap room, initially wore respirators, saw nothing on air monitor, then removed them

2/16 changed "B" cold trap outlet valve, operator had 100 d/m/100 ml in urine two days later

Those occurrences which did not specifically state that respiratory protection was not worn and/or it could not be determined that maintenance was being performed were omitted.

Examples

12/27 high air activity cold trap room valves 1 EQ2 and 4 EQ2 were tightened. No respirators were used.

11/7 plugs removed from valves EXB and BE4 evacuated and respirators used.

6. The lung burdens for some chem operators has increased over 1971 in vivo data.

7. Personnel alpha monitor in the locker room does not have a calibration tag, just repair tag from 1970. This was noted during the 1972 appraisal among others and a recommendation was made to correct this.

8. Entrance to a pit under a trichlor degreaser labeled as possibly being a hazard due to Freon contaminated air. The Freon hazard had long since been removed.

9. water jet Tube cutting operation with possible high noise level. Diesel pump.

X-710

1. Room 111, U sample analysis, during the monthly survey is always contaminated above PAL.
   a. Personnel lung burdens have increased over 1971 in vivo data
   b. General housekeeping was poor.
2. General philosophy for health protection is they can take care of themselves without IH&HP.
   a. They have established their own control and specifications over use of toxic chemicals in hoods, and were ~~unaware~~ of DOL evaluation of hood adequacy by breathing zone TLV measurements. $900,000 upgrading may not be warrnated.
   b. They are establishing their own labeling system for toxic chemicals.

X-333

Subcontractor performing work in high noise area: workers refuse to wear ear plugs because they are uncomfortable.

X-720

1. Instrument decontamination room
   a. very high level of ammonia in the air, exhaust fan not running, workers could not smell it,
   b. scionide solution is contained in an unmarked drum,
   c. vise table is an obvious contamination source.
2. Welding performed inside compressor inlets with Ni rods. ~~Without~~ respirators or exhaust, we were assured this would not continue.
3. Respirators discarded
4. General housekeeping poor
5. Warning sign is located at pit entrance under varnish pressure vessels. The area foreman was unfamiliar with its meaning. There are no entry requirements and the atmosphere could contain CO_2 and/or nitrogen.

Operating Specifications

1. CN 11.0-1 Safety Precautions UF_6 Cylinders dated August 26, 1970, states assault masks should be worn until personnel are assured that no leak exists when opening a cylinder valve or removing a pigtail when the cylinder is over atmosphere press, has Freon 114, contains impurities, or its contents or press is unknown. This

procedure is not followed, which is documented by 10 radiological occurrence reports ~~during 1972~~ during 1972. Three occurred in the ERP in X-326, and seven occurred during October, November, and December, 1972, in the 705 cold trap room. Furthermore, we were informed that employees sampling UF_6 cylinders do not wear respirators.

2. Discussions with 705 supervision indicated that operating specifications are not kept current. Procedural changes are made verbally. It was pointed out that employees are production oriented and sometimes take shortcuts to get more production.

3. Operating specifications require old drum labels to be obliberated and a trichloroethylene label affixed prior to filling. Old labels are not obliberated. We were assured this would be corrected.

4. Operating specifications for X-705 require oxide to be vacuumed up promptly. About 2" of oxide existed in the glove box in the transfer room.

5. Condenser heads are coated with epoxy. Respirators are called for in the operating specification. These were not used until IH requested them to be used.

6. Gloves were removed from the glove box in the tower room to look for a leak. They were not replaced and the area was not isolated. Procedure RR 2.6-1 violated.

IH&HP

1. Contamination surveys are performed routinely and area supervisors are informed when to clean up. No followup survey is made unless requested.
2. Routine industrial hygiene surveys are performed regardless of activity.
3. There is no apparent evaluation of survey data aimed at reducing contamination or finding the sources.
4. IH&HP supervisors do not feel they have the support of area supervisors.
5. The director of IH&HP does not feel he has been ~~given~~ his personnel enough direction or been involved enough in the program.
6. Technicians and supervisors do not spend enough time in the plant.
7. There was no industrial hygiene program at GAT during 1972. There are earmarks that an active IH program can be developed with the proper guidance and support.
8. IH&HP, compared to other gaseous diffusion plants has enough staff to conduct active programs. There are nine full-time personnel, plus a secretary. Two technicians spend virtually full-time in X-705 and the remaining seven conduct health protection and environmental programs throughout the plant. PAD is most similar and they will have six when they get their new technician. K-25 has five but no environmental protection duties.

Observations

Although adequately staffed in number, the GAT IH&HP Department is considered at the lower echelon among ORO facilities with respect to conducting an aggressive, effective, problem solving and introspective program. It is fortuitous that serious problems have not evolved; however, with the advent of OSHA, CIP-CUP, outside environmental concerns, a dynamic intergrated IH&HP program is cnnsidered essential to meet AEC requirements. Attitudes of both staff and supervisory personnel are considered major contributing factors. These attitudes no doubt have evolved slowly over the years and are perhaps the result of lack of confidence on one or both sides, secondary management interest, hesitant exercise of authority or responsibility and general complacency caused by the absence of reported serious occurrences.

The general observation above is derived not only from the recent special appraisal but from past appraisals which indicated trends and symptoms of a marginal IH&HP program.

More specific observations are noted as follows:

1. The IH&HP Department acts as a data collection point with little or no interpretation of the data.
2. The IH&HP Department has received little guidance or direction in carrying out its functions.
3. The IH&HP Department is not routinely factored into known problems or new operations with health protection interests.
4. Area supervision does not enforce compliame with written operation specifications.

5. Area supervision has not adequately enforced and/or indoctrinated their employees in the use and care, or necessity of respiratory equipment.
6. Area supervision and the IH&HP Department have allowed conditions with possible health hazard implications to proceed unchallenged.
7. Enforcement of GAT health protection standards upon subcontractors appear minimal.
8. The lung burdens of some of the chemical operators and product sampling employees have increased.

Conclusions

In view of our observations, it must be concluded that GAT's health protection program is inadequate to meet present needs. Future increases in activity and production will only lead to serious health protection problems if this program is not upgraded in the near future to meet the standards required of an AEC-ORO prime contractor. We feel that this situation has reached a point which requires the personal attention of GAT's top management to determine if the present system is capable, with considerable re-emphasis, of meeting GAT's needs or if a new approach is necessary. In either case, a speedy and adequate solution is requested.

Recommendations

The following recommendations are offered to aid GAT management in establishing an aggressive well-documented health protection program. It is recommended that:

1. The standard operating procedures for the Industrial Hygiene and Health Physics Department be reviewed, upgraded, and expanded upon to include among other things: procedures associated with an industrial hygiene program; a procedure for reviewing new or modified facilities or processes; a procedure for the contamination survey of excessed scrap and equipment.

2. The IH&HP Department establish an effective audit and surveillance program which includes (1) evaluation of potential hazards for all work locations, (2) recommendation for the resolution of problem areas and the implementation thereof in close liaison with area supervision, and (3) a record and reporting system which assures that unresolved problems are brought to the attention of top management.

3. Area supervision be made keenly aware of GAT's philosophy toward safety and instructed to cooperate with health protection personnel.

4. GAT management establish a mechanism to assure itself that GAT's health protection program is meaningful, dynamic, and supported by area supervision.

5. Operating specifications be reviewed, upgraded as necessary, and kept current including safety precautions and safety equipment necessary to conduct the operation.

6. Area supervision demand strict adherence to operating specifications.

7. Area superivision develop a training and retraining program for their employees to cover such areas as protective equipment, health physics and industrial hygiene. Employees should be well informed of their role in plant safety, what is required of them, and the possible consequences both health-wise and disciplinary if plant safety and/or operating specifications are violated. The documentation of these programs should include an outline of each individual topic covered, employees present, and the instructor.

UNITED STATES
ATOMIC ENERGY COMMISSION
OAK RIDGE OPERATIONS
P.O. BOX E
OAK RIDGE, TENNESSEE 37830
AREA CODE 615
TELEPHONE 483-8611

January 17, 1973

Goodyear Atomic Corporation
ATTN: Mr. C. D. Tabor
General Manager
Post Office Box 628
Piketon, Ohio 45661

Gentlemen:

MIDYEAR HEALTH PROTECTION REVIEW OF GAT

The Safety and Environmental Control Division, Health Protection Branch, is scheduling an indepth midyear review of GAT's health protection activities, primarily in the area of industrial hygiene, to begin on February 5, 1973. The review will be conducted by Messrs. R. D. Smith and J. T. Dufour and may extend over one or two weeks period. The beginning date of the review and requested material was informally discussed and agreed upon by Ben Kalmon.

In order to facilitate an efficient review, it is requested that GAT have available on February 5 the following information:

1. A list of the chemicals used including quantities and using division for CY 1972

2. For Buildings X-700, X-705, X-710, and X-720

   a. all industrial hygiene and health physics surveys for 1972

   b. process descriptions and building layouts

   c. noise survey data

   d. all face velocity measurements for hoods and tanks

3. The documented description of the line organization including functions and responsibilities for the industrial hygiene and health physics programs

Your cooperation in the conduct of this review will be appreciated.

Sincerely,

Charles A. Keller
Charles A. Keller, Director
Uranium Enrichment Division

OSH:RDS

cc: W. H. Travis, Safety, OR

INTERDEPARTMENTAL CORRESPONDENCE

GOODYEAR ATOMIC CORPORATION

TO: Listed Distribution

DATE: February 14, 1973

FROM DEPT: 420

DEPT:

CODE NO:

LOCATION:

REFERENCE:

SUBJECT: HANDLING AND LABELING OF CONTAINERS

A recent inspection of our stores area revealed that our procedure in labeling and handling of containers is not being strictly followed.

It is your responsibility to assure adherence to our departmental and standard practice procedures in receipt, control, handling and disbursement of all drums and cylinders. Your attention is directed to SPP H-22 and R-2, and to our SOP Section 424.1.

Additional correspondence relating to our procedures on inspection and rejection of compressed gas cylinders has also been initiated from this office, and should also be reviewed by you.

One specific incident came to our attention that requires your immediate remedial action, i.e., the reuse of non-returnable drums and requirements for labeling for identification of contents. Apparantly, we have been refilling various manufacturers' product non-returnable drums with trichlorethylene obtained from our X-700 bulk station.

It is necessary that the original identity of the material in the drum be removed or obliterated and a label or stencil be applied to appropriately identify the new contents, including the specific stores catalog number.

The existing stock should be checked to assure that the above conditions are being followed. Any drum material not meeting the above requirement should be corrected immediately. If it is necessary to spray paint over or relabel the drum to correct the deficiency, this should be done.

A sufficient number of usable drums should be collected to meet our requirements for the issuance of trichlorethylene. These drums must be cleaned, painted and labeled correctly. These drums will be used exclusively for trichlorethylene. Chemical Operations will be notified that trichlorethylene will not be placed in any other type drum.

C. F. Ray, Superintendent
Materials and Service

CFR:gmd

Distribution
R. Glass
H. Chambers
M. Kennard
W. Smith
C. Horner
G. McNamer

INTERDEPARTMENTAL CORRESPONDENCE

TO: H. E. Chambers

DEPT: 434
LOCATION: K-720

DATE: 3-10-71
FROM DEPT: 434
CODE NO:
REFERENCE:

SUBJECT: ISSUANCE OF USED DRUMS

Please reference SPP K-2, page 2 which reads as follows: "The Material Section shall maintain a supply of GAT owned 30 and 55 gallon drums. These drums will be issued on request."

When implementing the above procedure, all previous markings, labels and identification must be obliterated from the drum before being delivered to the requesting department. The use of spray paint is probably the best method of accomplishing the above.

R. T. Glass, Supervisor
Materials and Service

RTG:lp

cc: H. Watts
C. May

INTERDEPARTMENTAL CORRESPONDENCE

TO: L. E. Fuller, Manager
DEPT: Industrial Relations
LOCATION: X-100 Building

DATE: April 9, 1973
FROM DEPT: 401
CODE NO:
REFERENCE:

SUBJECT: REPORT ON HEALTH PROTECTION APPRAISAL FINDINGS

I have reviewed the subject report transmitted with C. D. Tabor's letter of March 22, 1973. Listed below are specific corrective actions that have been initiated or planned as they relate to deficiencies cited in the draft report involving our division's responsibility.

1. Page 1, X-700, Item 1 and Page 6, Item 3 Trichloroethylene Drums

The Materials Section routinely replenishes the Stores stock by sending empty drums to the X-700 trichloroethylene bulk station for inspection and refilling. The referenced finding in the report was in violation of our procedure for labeling drums.

Corrective action was initiated as evidenced by two departmental directives issued on February 14 and 23, 1973, copies attached. Recent follow up confirms compliance.

It is our responsibility to maintain a supply of these containers for plant use. Our present concern relates to past and current use of these recycled containers, and our possible vulnerability with respect to mis-labeling or dual labeling on those drums presently being used and stored throughout the plant. It should be pointed out that all empty containers do not pass through our hands, but some are reused at the point of original content consumption.

Our control over the removal of markings cannot be accomplished under these circumstances; however, it is recommended that a general safety notice be issued alerting our field personnel to the problem. This has been discussed with the Safety Department and with your concurrence the notice will be published. A proposed draft is attached for your review.

2. General Housekeeping

We will continue our efforts to improve our quality and quantity of work. Equitable work distribution and maximum utilization of manpower is our primary objective,

and toward this goal we have initiated an evaluation survey of individual assignments and their related job requirements. This has been a routine, periodic survey; however, in view of the deficiencies cited in the Health Protection Appraisal, as they relate to our responsibility, we will initiate and implement corrective measures where appropriate.

We anticipate immediate results, as is evident in the X-700 barrier assembly area. We expect to maintain that area to the maximum degree of cleanliness required by management.

As discussed in an Operating Committee meeting, the subject of "housekeeping" or "clean-up" usually results in a mental image of broom and mop. When a general notice relating to a declared "clean-up week" is issued, employees call upon the janitors to perform extra tasks such as washing furniture, cabinets, desks, etc. It is recommended that in the future any general notice issued on the subject of "housekeeping," incorporate specific examples of "do's" and "don'ts;" i.e., cigarette butts on floor, paper towels scattered in restrooms, scrap metal on floor, improperly stacked or stored material, etc. Use of the Clan may be another means of creating employee concern and acquiring results. This has been discussed with the Community Relations Department.

3. Under "Recommendations" in the report the following comments are offered as they are applicable to our operation.

   1. Engineering should be charged with the responsibility of assuring Industrial Hygiene and Health Physics Department's approval on applicable proposed subcontracts specification prior to release to Purchasing for invitation to bid. Enforcement of Terms and Conditions with respect to Industrial Hygiene and Health Physics should be the responsibility of the project engineer.

      The report also recommended that Industrial Hygiene and Health Physics Standard Operating Procedure be upgraded to provide for contamination survey of excess.

      We have procedures that provide for the contamination survey of scrap and equipment. Department 424 Standard Operating Procedure 424.11, page 4 and 424.12, page 2

provides for strict adherence to AEC Manual provisions. Standard Practice Procedure F1 requires positive identification of contaminated equipment prior to generation as excess.

We are charged with the responsibility to comply with these procedures, and can accomplish this only under direction and by authority of the Health Physics Department. All disposition records are adequately documented and are subject to audit.

This report and the resultant conclusion of those conducting the appraisal is, of course, of vital concern to us; however, I feel obliged to state my opinion concerning its apparent debasement of our operation and implications of complacency, and gross error on our part.

My subordinates reported to me, after interview with the principals in the appraisal, that their lack of understanding of operational requirements obscured their relative perceptive in relationship to our productive objectives. It is understandable that individuals who have the primary concern of health and safety be of this bent; however, a certain degree of tolerance appeared to be deficient in their expression, and I feel that this lack contributed to the tone of the report.

Business must be conducted, and production is our goal. There are risks involved in every undertaking; and we managers have the job of minimizing those dangers, even to the extent of loss of production. Corrective safety measures and operational refinement is paramount in our minds, and we welcome suggestions and constructive criticism that will enable us to achieve our primary objective safely.

I do not intend this expression to be construed to mean that we will not, to the extent of our capabilities and available manpower strive toward creating and maintaining an operation that will be both safe and productive.

H. Watts

H. Watts, Manager
Purchasing and Materials

Attachments

cc: C. D. Tabor
C. F. Ray
V. S. Emler

DRAFT OF PROPOSED NOTICE

Check your used drums!

We were recently cited by an AEC appraisal team for an obvious infraction involving improper labeling of recycled 55-gallon drums.

Used drums were being refilled with triclor for redistribution, and although they were labeled "triclor," somebody neglected to remove the label identifying the original contents. Dual labeling could be serious, as you are aware. We have corrected this immediate problem and all future recycled trichloroethylene drums will be color coded blue and white, and properly and singularly identified.

We are concerned now that there may be used containers in areas on plantsite that are mislabeled.

Take a look around your areas, and if you are reusing any type container for used oil, chemicals, water or any material, see that the contents are properly identified, and all other markings obliterated.

Reminder: Don't reuse vendor-owned returnable containers. These are identified with a red label and usually require the cash deposit listed on the label which is refunded on return.

Incoming Letters (AEC, et al) Received by General Manager

SUBJ: Annual Health Protection Appraisal of GAT - 1973

DATE: 12/17/73 DATE RECD/GAT: 12/20/73
FROM: C.A. Keller
TO: C.D. Tabor

*[x] Answer Required (To be prepared for General Manager's signature)
by: L.E. Fuller (name) 1/16/74 (date)
[ ] Answer Not Required
*[x] Date Due in AEC(et al) 1/21/74

DISPOSITION OF INCOMING LETTER:

Original: L.E. Fuller
[xx] Copy: R.B. Boeye
[ ] Rte: R.W. Brown
R.M. Rutherford
G.D. Althouse
C. R. Milone, GT&R

COMMENTS: Tabor's copy of appraisal routed N.H. Hurt
H. Watts
R.J. Reed
C.D. Tabor

REPLY FOR GENERAL MANAGER'S SIGNATURE:

*Address Reply To: C.A. Keller
Copy to those listed below (and so indicate on all copies).
R.V. Anderson
C. R. Milone

Blind copy to GAT personnel(& others)who received(blind)copy of letter being ansd.
*Copy to C.A. Keller if reply addressed to other AEC personnel.
**Obtain appropriate initials on General Manager's copy of reply before it is given to him for signature.

UNITED STATES
ATOMIC ENERGY COMMISSION
OAK RIDGE OPERATIONS
P.O. BOX E
OAK RIDGE, TENNESSEE 37830

AREA CODE 615
TELEPHONE 483-8611

December 17, 1973

Goodyear Atomic Corporation
ATTN: Mr. C. D. Tabor
General Manager
Post Office Box 628
Piketon, Ohio 45661

Gentlemen:

ANNUAL HEALTH PROTECTION APPRAISAL OF GAT - 1973

The annual health protection appraisal of GAT was conducted on October 1-5, 1973, by members of the ORO Safety and Environmental Control Division. The findings were informally discussed with AEC and GAT representatives at that time.

Enclosed are six copies of the formal report of the appraisal. You may proceed with implementation of the recommendations unless there are sound reasons why they are not warranted. In any event, your comments with regard to the conduct of the appraisal, the general content of the report, and the detailed plans for implementing or otherwise handling the recommendations are requested by January 21, 1974.

The cooperation extended by members of your staff during the appraisal is appreciated.

Sincerely,

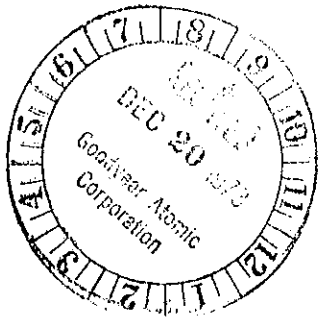
Charles A. Keller

Charles A. Keller, Director
Uranium Enrichment Operations Division

OSH:RWP

Enclosure:
Appraisal Report (6 cys)

cc w/encl:
R. V. Anderson, PORT
D. A. Horsewood, O&P, OR
W. H. Travis, S&EC, OR



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Charles A. Keller

Charles A. Keller, Director
Uranium Enrichment Operations Division

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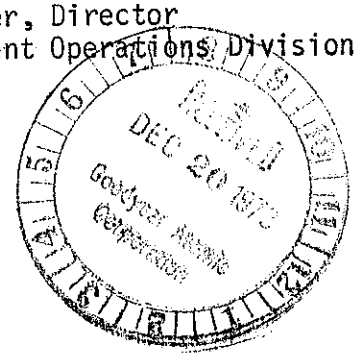


USAEC-ORO

HEALTH PROTECTION APPRAISAL

GOODYEAR ATOMIC CORPORATION

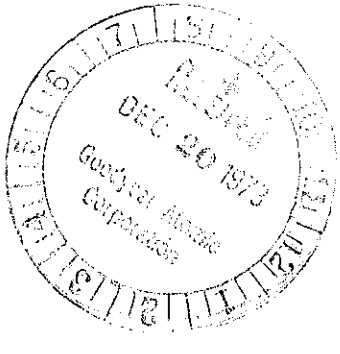
OCTOBER 1973

by

RICHARD D. SMITH

ROBERT W. POE

SAFETY AND ENVIRONMENTAL CONTROL DIVISION



I. Purpose and Scope

The annual health protection appraisal of GAT was conducted October 1-5, 1973, by members of the Health Protection Branch, ORO Safety and Environmental Control Division. The appraisal covered areas of health physics and industrial hygiene. Emphasis was placed on implementation of previous recommendations and the routine industrial hygiene programs.

II. Summary

The health protection programs at GAT seem to be receiving considerably more attention by management than was apparent in the last annual appraisal and the special midyear appraisal. Staff changes in the Industrial Hygiene and Health Physics Department and improved management support of the department have resulted in a stronger and more aggressive health protection program. Area supervision is more aware of their role in the overall protection of employees. These changes have begun to reestablish the overall GAT health protection program to a satisfactory level.

III. Recommendations

A. Implementation of the 1972 Recommendations

It was recommended that:

1. An active program be established to evaluate the adequacy of the local and laboratory hood exhaust systems in providing the personnel protection consistent with the hazards of the operation.

   The recommendation is being adequately implemented. Engineering evaluates flow rates on a periodic basis and the results are referred to IH for a determination of adequacy of flow for the protection of personnel. IH is in the process of taking air samples to verify the adequacy of the flow. Since the last appraisal, GAT has devised a classification scheme to govern the use of toxic materials in laboratory hoods. This sampling program will also help to confirm the validity of this classification scheme.

2. High noise areas be posted with information on protective equipment requirements and time limitations; engineering solutions to reduce the noise levels in these areas be considered.

Noise areas have been posted; however, the signs do not contain any information on protective equipment requirements or time limitations. GAT has chosen to control all personnel exposures in areas with noise levels more than 90 dBA but less than 100 dBA administratively through the combined use of time limitations and ear protection. Mandatory ear protection is required for noise levels above 100 dBA. This implementation does not adequately fulfill the recommendation for all situations as discussed in Section IV.C.2.

3. Form AEC-9 be posted in accordance with AECM-0525.

   This recommendation has been adequately implemented and Form AEC-9 has been posted.

4. Appropriate measures be taken to assure health physics instrumentation is recalibrated and serviced in accordance with plant procedures.

   Appropriate action has been taken to assure timely recalibration and service of field instruments.

B. Implementation of Recommendations of the Special Midyear Appraisal

As a result of the midyear appraisal (February 1973) eight significant recommendations were given to GAT to upgrade their health protection program to a satisfactory level of proficiency. Each of these recommendations will require time and considerable effort on the part of all GAT personnel to implement. During this appraisal, it was noted that GAT has taken the following actions to implement these recommendations.

It was recommended that:

1. GAT management establish a mechanism to assure itself that GAT's health protection program is meaningful, dynamic, and supported by area supervision.

   The entire safety, health protection, and environmental pollution departments have been consolidated to report to the medical director. The Health Protection Department has been reorganized internally and its environmental pollution functions have been transferred to the

environmental protection department. An additional industrial hygiene trainee has been added to the IH staff and a new medical doctor has been hired to allow the medical director more time to supervise programs under his control. The operating committee and the executive safety committee are composed of all division managers and the plant manager. Weekly meetings are held and approximately 50% of the operating committee meetings are spent on safety items.

2. The Standard Operating Procedures for the IH&HP Department be upgraded and expanded.

   The Industrial Hygiene Department (formerly the IH&HP Department) is in the process of complying with this recommendation. A new and expanded section of the SOP's for industrial hygiene is being prepared. The IH Department is being factored in, to a greater extent, on reviewing proposals for new and modified facilities. Proposals and engineering drawings must now be approved by industrial hygiene.

3. The IH&HP Department establish an effective audit and surveillance program which includes (1) evaluation of ... hazards.., (2) recommendations.., (3) records and reporting system....

   An audit program has been started which includes the disciplines of health physics, industrial hygiene, industrial safety, fire protection, and code inspection in conducting a comprehensive appraisal of GAT facilities. So far, X-710 has been evaluated and X-705 is next on the agenda. The IH Department has developed a form, Request for Immediate Corrective Action, which is being used to transmit recommendations to the building superintendent. The implementation method must be transmitted to the IH Department within seven days. If a satisfactory solution is not obtained, the division manager is contacted and, if necessary, the plant manager.

4. GAT management seeks the services of an industrial hygiene consultant.

   This was to be implemented at the discretion of GAT management. The industrial hygiene program appears to be proceeding well enough on its own and consultant services do not appear necessary.

5. Area Supervision be made keenly aware of GAT's philosophy toward safety and instructed to cooperate with health protection personnel.

   Area supervision has been informed orally and in writing that safety comes first. One area supervisor indicated that safety related maintenance is receiving a much higher priority. Health protection personnel indicated that relations have improved with area supervision.

6. Operating specifications be reviewed, upgraded, as necessary, and kept current.

   GAT has informed OR that all operating specifications will be reviewed with more vigor. OR was informed that all operating specifications for the oxide conversion facility will be reviewed and upgraded prior to its startup in November. Health protection personnel are required to review procedures with potential health protection problems.

7. Area supervision demand strict adherence to operating specifications.

   Area supervision has been instructed to insist upon adherence to operating specifications. The implementation of this recommendation is going to require considerable retraining and reorientation of the production oriented worker.

8. Area supervision develop a training and retraining program for their employees to cover such areas as protective equipment, health physics, and industrial hygiene.

GAT is restructuring their monthly employee safety meetings to include these topics. A record of each meeting is being maintained by the industrial safety department and includes a list of the attendees and topics.

At the closeout critique of the midyear appraisal, a list of approximately 30 specific deficiencies supporting the above recommendations was given to the plant manager. It was noted during this appraisal that those deficiencies which could be corrected rapidly were corrected.

C. Recommendations Resulting from this Appraisal

It is recommended that:

1. The fitting and training phase of the respirator program be implemented on a first priority basis and a time frame established for its completion. (See Section IV-C.4.)

2. Positive controls be installed on the sampling operation in X-746 directed toward isolating and containing radioactive material released as a result of failure of valves and pigtails. It is further recommended that more emphasis be put on protective equipment and operator training to prevent their exposure during release emergencies. (See Section IV-B.)

3. A positive effort be made to identify the source(s) of high airborne radioactivity levels and to provide improved containment for operations and maintenance activities in X-705, oxide conversion area. (See Section IV-B.)

4. The bioassay program be reevaluated and consideration be given to adopting a 24-hour sampling period particularly for employees involved in radiological incidents. (See Section IV-A.2)

IV. Findings

A. Personnel Monitoring Program

1. Film Badge Program

The number of employees routinely monitored at GAT remains about the same. At the time of the appraisal, no employee had received an exposure in excess of the AECM-0524 exposure limits. However, one employee was on restriction as a result of exceeding a quarterly plant action limit of 1250 mRem whole body exposure. This employee's total external exposure for the year is approximately 2 Rems. In addition, two other employees have received whole body exposures greater than one Rem to date. These employees work in the Toll Enrichment Facility, X-344, and the exposures are primarily due to increased work load. These three exposures are the highest for all monitored personnel this year.

2. Urinalysis Program

The employees with potential for exposure to airborne radioactive materials and possible internal exposure continue to submit urine samples on a routine basis. As in previous years, a large number of non-routine samples are taken as a result of employees involved in releases. This is particularly true for employees in the X-746 sampling area and the oxide conversion area in X-705 when it is operating. The results of the urinalysis for these employees is not conclusive in terms of knowing exactly what the incremental consequence is of continually passing small amounts of uranium through the body organs, particularly the kidneys. There has been no physical damage reported among these employees. However, it is recommended that GAT reevaluate the bioassay program and consider adopting a 24-hour sampling period. Twenty-four hour samples are particularly important in evaluating the exposure to employees involved in radiological occurrences. (See Recommendation 4)

3. Whole Body Counter

In addition to the urinalysis program, employees subject to potential internal exposure also receive whole body counts. The results this year show about three employees above fifty percent of a maximum permissible lung burden. The total number of employees that will be reported in the annual report should be less than last year.

B. Radiological Occurrences

During the appraisal, the radiological occurrence reports were reviewed for the X-705 oxide conversion area and the X-746 sampling area. While the total number of occurrences from these two areas is less than last year, the major causes are still the same, high airborne radioactivity resulting from malfunctioning valves and pigtails in X-746, maintenance in oxide conversion and employee failure to follow procedures in both areas.

In an attempt to understand the problems in X-746, it was discovered that hoke valve and pigtail malfunctions, which are responsible for the greater percentage of high airborne radioactivity occurrences, are very unpredictable and not subject to preventive maintenance. Thus, it would appear that more positive controls are necessary for the protection of employees. These positive controls should first be directed toward isolating or containing the sampling operation to prevent the escape of the material to the breathing zone of the employees should a malfunction of the pigtail or valve occur. Secondly, more emphasis should be put on protective equipment and operator training to minimize their exposure while containing these releases. (See Recommendation 2)

The releases in the oxide conversion area are primarily due to maintenance activities and equipment malfunction. Since maintenance activities are not always amenable to engineering solutions, a continuing effort on the part of health physics and area supervision is required to prevent employee exposure by insuring that the proper protective equipment has been prescribed, procedures are followed, and source(s) of airborne radioactive material are identified. Thus, it is recommended that such an effort be put forth by health physics and area supervision to solve this problem in the oxide conversion area. (See Recommendation 3)

C. Industrial Hygiene

1. Industrial Hygiene Monitoring Program

The toxic chemical monitoring program has been significantly expanded since the last appraisal. All toxicants used in routine operations have been identified and put on a routine monitoring program. The only exceptions are toxicants for which GAT does not presently have a simple analytical capability. Capabilities are being improved with the purchase of a gas chromatograph, a portable infra-red instrument and additional portable air samplers. The industrial hygienist has put forth a lot of effort to identify the toxicants used in all operations and in establishing the routine monitoring program.

The results of this expanded monitoring program show that the concentration of most toxicants used in routine operations are less than one-half the threshold limit value (TLV). The expectation to this is a pit under a trichlorethylene tank in X-700; the TLV is exceeded periodically because of leaks and holes in the tank system. An engineering cost estimate is underway to install a continuous monitoring system with lights to indicate when the concentration in the pit exceeds the TLV. If entry by personnel is needed, then a quantatitive measurement is made before entry.

Extensive use of breathing zone samples is being made and is considered by the industrial hygienist as the preferred method of monitoring to show compliance to TLV's. At present, a lapel sample is being used in some operations with a general air sampler and the results of these two methods are compared to establish correlations between room air concentrations, breathing zone concentrations, and operations. In the future, it may only be necessary to measure concentrations of room air if these measurements show a positive correlation between the breathing zone concentration and room air concentration. The method has been used mostly in the welding operations.

The primary goal of the monitoring program is to establish a baseline concentration for all operations both routine and non-routine and identify those that should continue on a routine monitoring program. This information will also be used in prescribing respiratory protection for employees working in these operations, if it is needed. All the non-routine operations have not been monitored but work is continuing in this area.

Industrial hygiene instrumentation is being increased as noted above. More attention is being given to maintenance and calibration. As a result, the mercury detector was taken out of service because it could not be calibrated. A new mercury detector will be ordered.

2. Noise

Over the past several years, recommendations have been made regarding noise problems at GAT. The most recent recommendation dealt with the posting of noise areas identified as the result of previous ORO recommendations. The noise areas have been posted and ear protection is required for employees working in areas where the noise level exceeds 100 dBA. The noise exposure of employees working in areas where the noise level is between 90-100 dBA is controlled administratively by a combination of time limitations and the use of protective equipment. This has proven to be difficult at best to administer during a cell changeout where the employee is allowed to wear ear protection either for the first half of the work day or the second half. During the critique, this problem was discussed with management and they were informed that it would be acceptable to require the use of ear protection full time during a maintenance operation where it is infeasible to either eliminate the noise source or to limit the exposure time as is the case with a cell changeout. The appraisers were assured that such a policy would be established particularly for high risk groups such as the maintenance employees.

3. Toxic Chemical Control

A program to inform the users of the hazards of the materials which they are working with is underway. Industrial hygiene now must approve all purchases of toxic materials and will receive a monthly update from purchasing on toxic chemical usage by department. Toxic material data sheets are being prepared for all hazardous materials. The only phase of the program not moving ahead was the labeling of hazardous materials according to some prescribed format. The labeling phase is lagging because there was no single standard adopted by the AEC to use as a guide. It was suggested that Federal Standard 313 be used. Industrial hygiene believes this program can be fully implemented by FY 1975.

4. Respirator Program

Since the last appraisal, GAT management has formed a respirator committee to evaluate and make recommendations to management regarding the upgrading of the respiratory protection program at GAT. The program recommended by the respirator committee and approved by management meets the minimal acceptable respirator program as prescribed by ANSI Z88.2-1969 and OSHA.

Two employees have attended the respirator training course offered by LASL and during the appraisal demonstrated an extensive understanding of respirators and the ANSI Z88.2-1969 respirator program requirements. One of these employees will be named as coordinator of the entire GAT respiratory protection program and be responsible for implementing the program.

The implementation of the program had not been worked out at the time of the appraisal, and no priority had been established. It is recommended to GAT, in light of their continuing airborne problems, that the fitting and training of employees in respirator usage and care become a first priority item for implementation, and a time frame be established for completion of this phase of the program. (See Recommendation 1)

D. Medical Program

Since the last appraisal, Dr. Theodore Abertowicz has joined the medical staff at GAT. Dr. Abertowicz had many years of industrial practice in the Hanford Operations and as a private physician in Richland, Washington. His most recent medical practice was in Student Health at Idaho University. He has interest in safety, preventive medicine and nutrition. With the addition of Dr. Abertowicz to the staff, this will allow more time for Dr. Lehman to direct the industrial hygiene and health physics programs.

Dr. Lehman is already spending more time in the field refamiliarizing himself with plant operations and getting more involved in health protection problems. He has identified several areas which he would like to strengthen in the medical program such as the evaluation of GAT's Hearing Conservation and Bioassay Programs, and keeping abreast of the medical requirements prescribed in the NIOSH criteria documents in order to adjust GAT's medical program as needed. One fundamental change in the overall medical program is a move toward preventive medicine. A pulmonary function test has been added to the periodic physical examination schedule.

Reviewers: Richard D. Smith
Health Physicist

Robert W. Poe
Health Physicist

UNITED STATES
ATOMIC ENERGY COMMISSION
OAK RIDGE OPERATIONS
P.O. BOX E
OAK RIDGE, TENNESSEE 37830

AREA CODE 615
TELEPHONE 483-8611

cy: NHH
RBB
LEF
RJR
HW
RWB
GDA
RMR

JAN 31 1974

Goodyear Atomic Corporation
ATTN: Mr. C. D. Tabor
General Manager
Post Office Box 628
Piketon, Ohio 45661

Gentlemen:

ANNUAL HEALTH PROTECTION APPRAISAL, 1973

Your response dated January 18, 1974, to the above appraisal has been received and reviewed by the Safety and Environmental Control Division.

This response is considered comprehensive, detailed, and adequately outlines your implementation plans for the recommendations. We are pleased to note the responsiveness with which the uprating of GAT's health protection program is being approached. I would like to point out once again that our Safety Division is available to lend assistance if desired.

Sincerely,
ORIGINAL SIGNED BY
Charles A. Keller

Charles A. Keller, Director
Uranium Enrichment Operations Division

OSH:RDS

cc: J. H. Hill
W. H. Travis

GOODYEAR ATOMIC CORPORATION

P. O. BOX 628
PIKETON, OHIO 45661

PHONE: 614-289-2331

JAN 18 1974

GAT-212-74-18

U. S. Atomic Energy Commission
ATTN: Mr. C. A. Keller, Director
Uranium Enrichment Division
Oak Ridge Operations
P. O. Box E
Oak Ridge, TN 37830

Gentlemen:

ANNUAL HEALTH PROTECTION APPRAISAL OF GAT - 1973

The formal report on the health protection appraisal conducted by the ORO Safety and Environmental Control Division during October, 1973 has been received, and the following comments are presented. The order and nomenclature used in the report are followed in this reply.

III. Recommendations

A.2. A proposal is being prepared by the Industrial Hygiene Department concerning the wearing of ear protection in areas where the sound pressure levels exceed 90 dBA. It is proposed that a sign be posted at the entrance to each of the areas indicating the time that an employee could spend in the area without the benefit of ear protection. This limit would be based on the latest sound pressure level survey made in the area. However, the use of ear protection full time during maintenance operations such as cell change-outs will still be enforced.

B.2. The Industrial Hygiene Department is continuing to upgrade and expand its Standard Operating Procedures. Included will be new sections concerning nuclear accident dosimeters, scrap surveys, and department responsibilities for handling releases of both radiological and toxicological materials. The anticipated date of completion is June 30, 1974.

3. The Industrial Hygiene Department's supervisor has assigned a staff health physicist to work with the Chemical Operations Department in a mutual effort to identify and eliminate all sources of airborne radioactivity in the Oxide Conversion Facility.

A change-out is planned for March, 1974. During the change-out, the Industrial Hygiene Department will audit maintenance with respect to the generation of radiological and toxicological problems. The department will be looking at areas such as contamination control, airborne radioactivity, toxicological composition of smoke generated by cutting and arc-air welding, and the use of solvents for surface cleaning.

6. The comprehensive appraisal of GAT facilities is continuing. The audit of X-705 is completed and X-700 is started. It is anticipated that each facility will be appraised at least annually.

   Process Engineering is reviewing and upgrading all operating specifications. There are approximately 500 specifications. Top priority has been given those concerned with handling UF_6. Two employees are assigned exclusively to the project.

   Prior to the start-up of Oxide Conversion in November, 1973, the operating specifications for this facility were reviewed, updated, and studied by the operating personnel. At that time, only the specifications maintained in the control room of the facility were updated with "write-in" changes. Chemical Operations is presently in the process of formally updating all oxide conversion operating specifications and these will be issued with a revision date of 1974. All the latest revisions will be incorporated in these specifications. A new operating specification will be added concerning the filling of UF_6 cylinders.

   The Industrial Hygiene and Safety Departments must review and approve all procedures in the area of health protection.

7. A QA Plan, "UF_6 Release Prevention in Feed, Withdrawal, Sampling, and Transfer Operations," is in the final draft stage. Included in the plan are provisions for the foreman to "audit each operation by watching and questioning the operator to assure that work is being performed in accordance with the QA Plan, instructions and latest specifications." The above is to be done at least once every three months and the information documented. A very integral part of this audit will be the health protection aspects of the individual operation.

   Even the most qualified individual will not always be capable of drafting an operating specification which incorporates all possible and acceptable alternative methods of operation. Administrative enforcement of operating procedures must allow

the competent individual the capability of deviating from an established procedure. However, such a decision must include an assessment of the possible health hazards to be encountered, as GAT management demands strict adherence to all explicit and inherent health protection aspects of an operating specification.

8. More emphasis is being placed on the health protection aspects of safety at each department's monthly safety meeting. In addition, many departments have assigned a foreman the primary responsibility of conducting training sessions in their respective areas. The CIP and CUP programs will see a large increase in maintenance and operations employees. The Training Department's orientation program for these new employees includes an in-depth presentation on such subjects as general safety, health physics, and industrial hygiene.

   A major employee-foreman training and retraining program has been instituted by the Material Handling Department. A senior general foreman of the department has been assigned the responsibility of conducting the program. The present plans call for three men to be in training each day. It will require approximately six months for all the department employees and foremen to complete the program. When these individuals have completed the program, it will be repeated. Industrial Hygiene, Health Physics, Safety, Criticality, and other disciplines will assist in the program.

C.1. The Safety Department has completed the planning of our new respirator program and has now begun implementing it. The man who will administer the inspection, assembly, and repair portions of the program will join the department on January 16, 1974; he will participate in the LASL Respirator Training Program beginning January 21, 1974. The individual fitting and personnel training parts of the program will also be administrated by the Safety Department, and they are scheduled to begin about mid-March. Interim qualitative fitting (through use of the amyl acetate technique) currently is done as priorities dictate.

2. Present plans call for the X-746 Sampling Facility to be moved to X-344 in July, 1974. At X-344, the sampling facility will be located in a containment-type room isolated from the rest of the building. This isolation will include an independent air filtering and exhaust system. Engineering is also evaluating hardware for containment of the actual sampling operation. This would place the cylinder and associated sample container, valves, etc., inside a sophisticated containment system. (Also see III.B.8)

3. As pointed out in III.B.3, positive efforts are being made to identify the sources of high airborne radioactivity levels. New design and certification of pigtails will provide improved containment of UF_6 from this source.

   It is not possible to remove all entrained uranium from the Oxide Conversion Facility prior to any maintenance work. Therefore, airborne radioactivity can be expected when the system is opened to the atmosphere. Whenever the system is opened, a hazardous work permit is issued by Chemical Operations. The permit clearly details the protective clothing and equipment required to safely perform the work.

4. GAT's bioassay program has been re-evaluated. Twenty-four-hour samples are requested of employees involved in radiological incidents. The 24-hour samples are also requested of employees whose routine urine samples indicate high results for no apparent reason. The frequency and longevity of the 24-hour sample period are at the discretion of the Medical Director. Included in the results of the 24-hour samples are the volumes of the samples submitted.

IV. Findings

A.1. The 1973 work load at the Toll Enrichment Facility, X-344, increased somewhat over 1972. However, the exposure to the employees at the facility was primarily from process cylinders containing old material with buildup of daughter products. An engineering order has been written for evaluating the costs of providing shielding for the transfer piping and associated equipment. The new equipment to be installed in this area in FY-1975 has been provided with shielding.

2. The implementation of the QA Plan, "UF_6 Release Prevention in Feed, Withdrawal, Sampling, and Transfer Operations," will decrease the number of non-routine urine samples taken as a result of inadvertent releases.

   Goodyear management feels that there is an increasing awareness on the part of its employees that the company is primarily concerned with their health and safety, and that following prescribed procedures is their obligation in the overall safety picture. This obligation would also lead to fewer incidents of inadvertent releases.

3. The 1973 results of the whole body counts show two employees above 50% of maximum permissible lung burden.

B. The managers of the Technical, Plant Engineering and Maintenance, and Production Divisions formed a Flexible Connectors for UF_6 Transfer Committee to review the use of these flexible connectors throughout the plant. The responsibility of the committee is to review procedures, evaluate connectors, consider the use of additional protective equipment, and take the steps necessary to develop a transfer method which will reduce UF_6 releases to a "zero" level. The committee's report, UHD-2, dated December 20, 1973, outlines the procedure for the design, use, testing, and certification of all flexible connectors on plantsite.

C.3. The labeling system as described in Federal Standard 313 has been adopted. The material for making the labels has been ordered by Reproduction.

The appraisal by Messrs. Smith and Poe was conducted in a professional manner, and their suggestions and recommendations will be helpful in enhancing our health protection program.

Very truly yours,

GOODYEAR ATOMIC CORPORATION

Original Signed By
C. D. TABOR

C. D. Tabor
General Manager

SHH:hg

cc R. V. Anderson
C. D. Tabor
L. E. Fuller
H. B. Lehman, M.D.
S. H. Hulett

bc C. R. Milone, GT&R
G. D. Althouse
R. B. Boeye
R. W. Brown
N. H. Hurt
R. J. Reed
R. M. Rutherford
H. Watts

UNITED STATES
ATOMIC ENERGY COMMISSION

IN REPLY REFER TO:
M:RHT

Portsmouth, Ohio

FEB 7 1962

Goodyear Atomic Corporation
Portsmouth, Ohio

Attention: Mr. G. H. Reynolds, General Manager

Subject: GAT HEALTH PROTECTION REVIEW - 1962

Gentlemen:

Please refer to my letter to you dated January 24, 1962, subject as above.

The 1962 health protection survey will be held here on March 6, 7, and 8. Messrs. Wiley Johnson and Raymond Hervin, ORO personnel, will conduct the review.

Very truly yours,

Robert H. Thalgott

Robert H. Thalgott
Manager, Portsmouth Area

RC DRD

DHG
2/7/62

UNITED STATES
ATOMIC ENERGY COMMISSION

IN REPLY REFER TO:
M:RHT

Portsmouth, Ohio

JAN 24 1962

Goodyear Atomic Corporation
Portsmouth, Ohio

Attention: Mr. G. H. Reynolds, General Manager

Subject: GAT HEALTH PROTECTION REVIEW - 1962

Gentlemen:

Confirming oral advice the 1962 Health Protection Review of GAT by ORO personnel is scheduled for the week of March 5, 1962. It is anticipated that the review will be of three days' duration and will concentrate upon the following subjects:

1. Follow-up of 1961 recommendations.

2. Environmental Monitoring Program.

3. Operational Procedures.

4. Implementation of AEC Manual Chapters.

Mr. Sapirie has expressed his pleasure in the degree to which the recommendations contained in the 1961 review have been implemented. He has agreed that the subject of an expanded physical examination program should be held in abeyance and reopened when a more definitive AEC policy has been issued.

When we have learned the exact day or days and the personnel involved in the review we shall inform you immediately.

Very truly yours,

Robert H. Thalgott

Robert H. Thalgott
Manager, Portsmouth Area

DAB 1/24/62

Those Listed Below

NOV 15 1960

C. L. Karl, Area Manager, Fernald Area Office

ORO CONTRACTOR HEALTH PROTECTION PROGRAM REVIEWS

SYMBOL: H:HLG

Reference is made to a memorandum dated October 28, 1960, subject as above, symbol:ORH:JAL, to those listed below. This memorandum notified the recipients that a meeting will be held at Fernald on November 15, 1960, to hold preliminary discussions with regard to the subject reviews.

The meeting will be held in the AEC Conference Room in the AEC Wing of the Administration Building beginning at 9:00 A. M. on the morning of November 15, 1960.

It is requested that Area and Contractor representatives who plan to attend this meeting notify C. L. Karl, Area Manager, FAO, of their requirements for hotel accommodations and transportation to the Fernald site. Fernald lies some 17 miles Northwest of downtown Cincinnati and can only be reached by automobile. Public (bus) transportation is not available. The National Lead Company of Ohio will furnish pick-up service at the major downtown hotels, the railroad station and the airport provided this service has been requested 24 hours in advance. Those attending the meeting who desire this service should furnish information, as soon as possible, as where they want to be picked-up, what time their train or plane will arrive, and how many there will be in the group.

Hotel accommodations will be arranged by the AEC Office upon notification from the individual or group of their requirements. The Fountain Square Hotel is normally used unless a preference is stated for another hotel.

C. L. Karl

Addressees:
F. H. Belcher, Area Manager, St. Louis Area
R. H. Thalgott, Area Manager, Portsmouth Area
C. S. Shoup, Research & Development Division, ORO

CC: H. C. Armstrong
C. A. Keller
J. W. Hach
H. M. Roth

44130

Office Memorandum • UNITED STATES GOVERNMENT

TO : Those Listed Below DATE: October 28, 1960

FROM : S. R. Sapirie, Manager
Oak Ridge Operations

SUBJECT: ORO CONTRACTOR HEALTH PROTECTION PROGRAM REVIEWS

SYMBOL: ORB:JAL

Reference is made to our memorandum dated April 6, 1960, subject as above and to your recent conversations with H. M. Roth concerning the annual review of contractor health protection programs.

It is requested that appropriate area and contractor management and health protection personnel meet with representatives of our Research and Development Division at the National Lead plant in Cincinnati on the morning of November 15, 1960, to hold preliminary discussions with regard to the subject reviews. The purpose for the proposed meeting will be to familiarize area and contractor personnel with the background and objectives of the reviews and with tentative ORO plans for carrying out these reviews. The meeting will also afford an opportunity for area and contractor personnel to bring to the attention of ORO any problems or recommendations with regard to the reviews. Enclosed are suggested topics for discussion.

We will appreciate your notifying C. S. Shoup of the Research and Development Division and C. L. Karl of FAO by November 4, 1960, which area and contractor representatives will attend. Details with regard to meeting time and place will be forwarded by Mr. Karl.

S. R. Sapirie

Enclosure:
List of Topics.

Addressees:
F. H. Belcher, Area Manager, St. Louis Area
R. H. Thalgott, Area Manager, Portmouth Area
C. L. Karl, Area Manager, Fernald Area

CC: RJ C. Armstrong
C. A. Keller
J. W. Ruch
H. M. Roth

SUGGESTED TOPICS FOR DISCUSSIONS DURING PRELIMINARY MEETING ON HEALTH PROTECTION PROGRAM REVIEW.

1. Comments on the increased emphasis on radiation and on health protection by the Federal Government.

   a. Reorganization in AEC and the USPHS. Formation of the Office of Health and Safety and its responsibilities.

   b. Personnel and duties of the Federal Radiation Council.

2. The basis for, and the need for, a health protection evaluation program.

3. Requirements under the revised Manual Chapter 0504.

4. Discussions on scheduling and arrangements for visits to plant sites.

UNITED STATES
ATOMIC ENERGY COMMISSION

IN REPLY REFER TO:
M:RHT

Portsmouth, Ohio

NOV 4 1960

Goodyear Atomic Corporation
Portsmouth, Ohio

Attention: Mr. G. H. Reynolds, General Manager

Subject: ORO CONTRACTOR HEALTH PROTECTION PROGRAM REVIEWS

Gentlemen:

As agreed in our telephone conversation on November 3, we are enclosing copies of the correspondence regarding the subject meeting. If you find it necessary for your people to go to Fernald on the 14th, I can request Mr. Karl to make reservations for them.

Very truly yours,

Robert H. Thalgott

Robert H. Thalgott
Manager, Portsmouth Area

Enclosures:
1. Cy SRS memo dtd 10/28/60
2. Cy CLK memo dtd 11/2/60

C.C. w/encls. to Wd. 11/4/60

11/4/60

GOODYEAR

Goodyear Atomic Corporation

P.O. Box 628

Portsmouth, Ohio

A SUBSIDIARY OF THE GOODYEAR TIRE & RUBBER COMPANY
ACTING UNDER U. S. ATOMIC ENERGY COMMISSION CONTRACT AT-(33-2)-1

PLANT SITE:
PIKE COUNTY, OHIO

TELEPHONE:
WAVERLY, OHIO

TELEGRAMS:
WUX-PORTSMOUTH, OHIO

DEC 26 1961

U. S. Atomic Energy Commission
Portsmouth, Ohio

Attention: Mr. R. H. Thalgott
Manager, Portsmouth Area

Subject: GAT HEALTH PROTECTION PROGRAM REVIEW - MAY 1961

Gentlemen:

Supplemental to your letter of June 13, 1961 and our letter of July 21, 1961, subject as above, the follow-up comments below are offered regarding three of the four specific recommendations:

a. It is recommended that GAT re-evaluate criterion for assignment of employees to periodic physicals.

No comment other than that contained in our letter of July 21.

b. It is recommended that some additional effort be made to control dusting during operations in the Feed Plant.

The Industrial Hygiene and Health Physics Department made certain recommendations to better control dusting during operations in the Feed Plant following the health protection program review last May. Periodic checks made since then indicate that these recommendations are being followed.

c. It is recommended that operating procedures be reviewed more frequently in order to be sure that they are current.

Since the appraisal, these operating procedures have been reviewed by Production supervision. Some progress has been made on updating them. However, the job is not complete and with the imminent shutdown of the Feed Plant we do not anticipate that it will be completed.

12/26/61

d. It is recommended that procedures be reviewed for control of unsafe containers in the decontamination building.

Supervision has been impressed with the importance of controlling the movement of unsafe containers in this area with the following action taken:

1. Two signs have been erected in the Recovery Room reading as follows: Criticality Control -- "Only geometrically safe containers beyond this point unless authorized."

2. Mop buckets have been drilled with overflows to limit the amount of material in the bucket.

3. "Contaminated Burnables" containers have been drilled with holes 1½" from bottom.

4. Additional holders have been installed to accommodate containers of uranium-bearing material.

5. Criticality discussions have been conducted at monthly safety meetings.

6. Semi-monthly audits (unannounced) are conducted by Criticality personnel. Any unsafe containers are noted and brought to the attention of supervision.

A subsequent nuclear safety program review was made during the period October 30 to November 1, 1961 by W. A. Johnson, AEC-ORO, and the recommendations are presently being reviewed.

Sincerely yours,

GOODYEAR ATOMIC CORPORATION

Original Signed by
C. R. Milone.

DEPUTY GENERAL MANAGER

G. H. Reynolds
General Manager

ALW:jr

cc: G. H. Reynolds
R. M. Rutherford
D. W. Doner
C. L. French

10/5/73
Smith
+ Poe -

HEALTH PROTECTION APPRAISAL

The following comment and recommendations are made to GAT as a result of the 1973 Health Protection Appraisal.

Comment

It has been noted through conversations with various GAT personnel that increased attention has been placed upon health protection. The stimulus appears to be present to develop an aggressive program and GAT is urged to continue in this direction.

Recommendations

It is recommended that

1. The fitting and training program identified in the respirator program become a first priority item for implementation and that a time frame be established for completion of this phase of the program.

2. Health Physics and supervision in X-705 and X-746[redacted] work closely to solve the problems causing high airborne radioactivity in these areas.

3. The bio assay program be re-evaluated and consideration be given to adopting a 24-hour sampling period.

UNITED STATES
ATOMIC ENERGY COMMISSION
OAK RIDGE OPERATIONS
P.O. BOX E
OAK RIDGE, TENNESSEE 37830

AREA CODE 615
TELEPHONE 483-8611

SEP 11 1973

Goodyear Atomic Corporation
ATTN: Mr. C. D. Tabor
General Manager
Post Office Box 628
Piketon, Ohio 45661

Gentlemen:

ANNUAL HEALTH PROTECTION APPRAISAL OF GAT - 1973

This is to confirm the dates of October 1-5, 1973, for the annual health protection appraisal as previously agreed upon by Mr. Sam Hulett of your staff.

The appraisal this year will cover in detail GAT's implementation of the recommendations resulting from all past appraisals, with special emphasis on the past two. No special preparation on the part of GAT personnel will be required. However, any existing documentation outlining GAT's implementation of the recommendations would be helpful.

Your cooperation in this matter will be appreciated.

Sincerely,
Original Signed
By B. M. Robinson

Charles A. Keller, Director
Uranium Enrichment Operations Division

OSH:RDS

cc: R. A. Anderson, PORT
W. H. Travis, S&EC Dv., OR

GOODYEAR ATOMIC CORPORATION

P. O. BOX 628
PIKETON, OHIO 45661

PHONE: 614-289-2331

JAN 15 1973

GAT-212-73-10

U. S. Atomic Energy Commission
ATTN: Mr. C. A. Keller, Director
Uranium Enrichment Division
Oak Ridge Operations
P. O. Box E
Oak Ridge, TN 37830

Gentlemen:

ANNUAL HEALTH PROTECTION APPRAISAL OF GAT 1972

Following is our answer to your letter of December 26, 1972, requesting more detailed plans relevant to the annual health protection appraisal.

In reference to employee protection in high noise levels, these areas are to be posted with signs or placards in the immediate future. Orders have been placed for both. Adhesive-back signs are expected by January 15, 1973, and final posting should be completed by January 31, 1973. Placards are to be posted on high level noise equipment stating that ear protective devices are required during their operation. We have chosen not to post time limit requirements; instead, protective devices will be required in posted areas at all times, and this regulation will be enforced by immediate supervision.

Regarding evaluation of plant exhaust systems, in accord with the August 1972 AEC request regarding compliance with OSHA standards, a survey of all exhaust systems has been completed (copies of the report were forwarded to the Oak Ridge Operations Office on October 30, 1972). Since GAT facilities were built to early 1950 design criteria, it is evident that many systems would have to be redesigned, rebuilt, or additional systems added to comply with current OSHA standards. Correction of this condition is a part of the GAT general plan for OSHA compliance. In the interim, Industrial Hygiene will evaluate each exhaust system with respect to health hazards. This will take into account frequency, type, and amounts of toxic loads to the particular system. Recommendations will then be made as to appropriate protective devices or other measures to be employed. The industrial hygiene evaluation will be starting immediately. The target date for completion is July 1, 1973. As soon as this

APPROVED FOR RELEASE BY:
M. M. Eisenhardt

evaluation is completed, we will prepare a detailed description of our plan for correction, including scheduling; the plan and its schedule will be submitted to your office.

Goodyear will perform face velocity surveys on an annual basis on all local exhaust systems and every three months on the laboratory hoods in the X-710 building, as outlined in our letter of October 23, 1972. Industrial Hygiene will review these results and update the health hazards no less often than annually, and on a more frequent basis if indicated. A permanent record of the survey results and hazard evaluation of each system will be maintained.

Regarding inplace testing of HEPA filters, testing will be completed in approximately 4 to 6 weeks. The filters in the Product Sampling Area, X-326 building, have been retested but failed to pass. They are being reinspected in search of leaks; the leaks will be repaired; and the filters will again be tested in place. Taps and new filters are being installed in the X-705 building, with testing and retesting scheduled for completion by January 31, 1973. The filter testing in the SS Materials Sampling Area, X-344 building, should be completed by February 16, 1973.

In order to gain additional information and suggestions pertinent to the problem of exhaust systems and ventilation, plans are being made to send an industrial hygienist to the Industrial Ventilation Conference, February 18-23, sponsored by Michigan State University.

Very truly yours,

GOODYEAR ATOMIC CORPORATION

(Signed)
C. D. Tabor
General Manager

HBL:VSE:cly

cc: R. V. Anderson
R. W. Brown
R. B. Boeye
G. D. Althouse
L. E. Fuller
H. B. Lehman, M.D.
B. Kalmon
V. Emler

GOODYEAR ATOMIC CORPORATION

P. O. BOX 628
PIKETON, OHIO 45661

PHONE: 614-289-2331

GAT-212-73-10

U. S. Atomic Energy Commission
ATTN: Mr. C. A. Keller, Director
Uranium Enrichment Division
Oak Ridge Operations
P. O. Box E
Oak Ridge, TN 37830

Gentlemen:

ANNUAL HEALTH PROTECTION APPRAISAL OF GAT 1972

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on Oct. 31, 1972

APPROVED FOR RELEASE BY:
M. M. Barnhardt

ACTING UNDER U. S. ATOMIC ENERGY COMMISSION CONTRACT AT-(33-2)-1

Goodyear will perform face velocity surveys on an annual basis on all local exhaust systems and every three months on the laboratory hoods in the X-710 building, as outlined in our letter of October 23, 1972. Industrial Hygiene will review these results and update the health hazards no less often than annually, and on a more frequent basis if indicated. A permanent record of the survey results and hazard evaluation of each system will be maintained.

Regarding inplace testing of HEPA filters, testing will be completed in approximately 4 to 6 weeks. The filters in the Product Sampling Area, X-326 building, ~~are being retested this week (January 8 thru January 12)~~. Taps and new filters are being installed in the X-705 building, with testing and retesting scheduled for completion by January 31, 1973. The filter testing in the SS Materials Sampling Area, X-344 building, should be completed by February 16, 1973.

In order to gain additional information and suggestions pertinent to the problem of exhaust systems and ventilation, plans are being made to send an industrial hygienist to the Industrial Ventilation Conference, February 18-23, sponsored by Michigan State University.

Very truly yours,

GOODYEAR ATOMIC CORPORATION

C. D. Tabor
General Manager

HBL:VE:cly

cc: R. V. Anderson

bcc: R. W. Brown
R. B. Boeye
G. D. Althouse
L. E. Fuller
H. B. Lehman, M.D.
B. Kalmon
V. Emler

have been retested but failed to pass. They are being reinspected in search of leaks; the leaks will be repaired; and the filters will again be tested in place.

APPROVED FOR RELEASE BY:
H. M. Barnhardt

UNITED STATES
ATOMIC ENERGY COMMISSION
OAK RIDGE OPERATIONS
P.O. BOX E
OAK RIDGE, TENNESSEE 37830

AREA CODE 615
TELEPHONE 483-8611

DEC 26 1972

Goodyear Atomic Corporation
ATTN: Mr. C. D. Tabor
General Manager
Post Office Box 628
Piketon, Ohio 45661

Gentlemen:

ANNUAL HEALTH PROTECTION APPRAISAL OF GAT, 1972

GAT's reply of December 14, 1972, to the ORO 1972 health protection appraisal has been reviewed. It appears from the reply that some clarification of the recommendations are in order so that a more complete outline of GAT's implementation plans can be made.

ORO is aware of the fact that the present OSHA standards do not require the posting of high noise areas; however, the proposed NIOSH standard for noise abatement does. The recommendation was not made because of any existing or pending standards requiring posting but to aid in the administrative control of areas with high noise levels. Posting of these areas is considered necessary to inform employees of any time restrictions or protective equipment requirements. Therefore, it was recommended and is still recommended that the areas in question be posted. Additional details outlining your implementation and schedule of completion of this recommendation is requested.

Concerning the evaluation of both local and laboratory hood exhaust systems, the recommendation was not made solely for Building X-710. The evaluation of exhaust systems, from an industrial hygiene standpoint, throughout the plant has admittedly not been made and the recommendation was intended to rectify that situation. GAT's reply and referenced letter of October 23, 1972, only deals with Building X-710. Therefore, the response to this recommendation is incomplete, and it is requested that a detailed description of your plan including schedule of completion be prepared.

APPROVED FOR RELEASE BY:
M. M. Barnhardt

Concerning the inplace testing of HEPA filters, we would like a scheduled completion date.

It is requested that this information be supplied to this office by January 16, 1972. Your attention to this matter is appreciated.

Sincerely,

SIGNED BY
Charles A. Keller

Charles A. Keller, Director
Uranium Enrichment Division

OSH:RDS

cc: R. V. Anderson
W. H. Travis

UNITED STATES
ATOMIC ENERGY COMMISSION
PORTSMOUTH AREA OFFICE
PIKETON, OHIO 45661

M:ERS

Goodyear Atomic Corporation
Piketon, Ohio 45661

Attention: Mr. G. M. Reynolds, General Manager

Subject: ANNUAL INDUSTRIAL HYGIENE AND HEALTH PHYSICS SURVEY

Gentlemen:

This will confirm the agreement with Mr. Rutherford that the annual Industrial Hygiene and Health Physics Survey be performed on November 19, 20, and 21. W. A. Pryor, Jerome F. Ving and Wayne Hibbitts will perform the survey.

The following is a list of areas of interest that will be reviewed during the visit:

1. Results of whole body counts to date and estimates of future counting requirements.

2. Operating experience with the Oxide Conversion Facility.

3. Bio-assay results, restrictions and analyses.

4. New development work having health protection implications.

   (a) Changes in the Solution Recovery Facility;

   (b) The environmental sampling facilities.

   (c) A review of radiation producing machines, i.e., X-ray machines and related equipment.

(d) Results of sampling of sewage and steam plant effluents.

We would appreciate your having the data available for the visitors upon their arrival.

Very truly yours,

Original Signed By
R. V. ANDERSON
Area Manager

R. V. Anderson
Manager, Portsmouth Area

UNITED STATES
ATOMIC ENERGY COMMISSION

IN REPLY REFER TO:
O:WK

Piketon, Ohio

JAN 4 1966

Goodyear Atomic Corporation
Piketon, Ohio

Attention: Mr. G. H. Reynolds, General Manager

Subject: ORO 1966 HEALTH PROTECTION APPRAISAL

Gentlemen:

Enclosed for your information and planning is an outline of the program and the objectives of ORO health protection appraisals during CY 1966. A data sheet is also included indicating information desired from contractors early in CY 1966 for the use of ORO personnel in preparing for reviews. The data will be discussed between ORO and GAT personnel during the annual ORO appraisal. Please use the following guidelines in completing the data sheet.

1. A great deal of time and effort need not be devoted to completion of the form. Reasonable estimates of costs and man-years as available to health protection staff personnel will suffice.

2. It is recognized that programs at some facilities may not readily lend themselves to the breakdown on the form. Best estimates according to the form are requested, however.

3. Fractional man-year estimates may be made in categories where the man-year effort is small.

4. Where cost information is indicated, an estimate of direct costs should be provided, exclusive of overhead or indirect costs.

5. Uranium and thorium handling shall be considered a health physics and not an industrial hygiene effort.

1/5/66

6. For purposes of the form health physics and industrial hygiene "technicians" shall mean employees without a Bachelor's Degree or its equivalent.

7. "Non-staff Sample Analysis" means evaluation, analysis, or other service provided by other groups within the facility or by outside groups.

Your cooperation in completing the data sheet and returning it to this office by January 29 will be appreciated. If you have any questions concerning what is intended on the data sheet form, please contact me or my staff.

Please note that the 1966 ORO Health Protection Appraisal at Portsmouth is scheduled for May with Messrs. Thornton and Johnson acting as reviewers.

Very truly yours,

R. V. Anderson

R. V. Anderson
Manager, Portsmouth Area

Enclosure:
Subject Appraisal Outline, w/Data Sheet Form

UNITED STATES
ATOMIC ENERGY COMMISSION

Portsmouth, Ohio

IN REPLY REFER TO:
O:RHT

... 13 1960

Goodyear Atomic Corporation
Portsmouth, Ohio

Attention: Mr. D. H. Francis, General Manager

Subject: ORO CONTRACTOR HEALTH PROTECTION PROGRAM REVIEWS

Gentlemen:

We are enclosing a copy of a memorandum from Mr. S. R. Sapirie dated April 6, 1960, subject as above, with its attachments.

The memorandum and the attachments describe the manner in which ORO intends to implement provisions of AEC Manual, Chapter 0504.

We should appreciate any comments you may have regarding the philosophy, scope or details of the program.

Very truly yours,

R. H. McCulloh
Manager, Portsmouth Area

Enclosure:
Cy memo fr Sapirie dtd 4-6-60 w/attachments

cc w/encl - Davis
4/14